

## THE DEVELOPMENT OF WASTE MANAGEMENT IN THE UK c.1960–c.2000

The transcript of a Witness Seminar held by the History  
of Modern Biomedicine Research Group, Queen Mary  
University of London, on 25 February 2014

**Edited by E M Jones and E M Tansey**

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This volume is dedicated to Mr Ernie Sharp (1921–2015)



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## WHAT IS A WITNESS SEMINAR?

The Witness Seminar is a specialized form of oral history, where several individuals associated with a particular set of circumstances or events are invited to meet together to discuss, debate, and agree or disagree about their memories. The meeting is recorded, transcribed, and edited for publication.

This format was first devised and used by the Wellcome Trust's History of Twentieth Century Medicine Group in 1993 to address issues associated with the discovery of monoclonal antibodies. We developed this approach after holding a conventional seminar, given by a medical historian, on the discovery of interferon. Many members of the invited audience were scientists or others involved in that work, and the detailed and revealing discussion session afterwards alerted us to the importance of recording 'communal' eyewitness testimonies. We learned that the Institute for Contemporary British History held meetings to examine modern political, diplomatic, and economic history, which they called Witness Seminars, and this seemed a suitable title for us to use also.

The unexpected success of our first Witness Seminar, as assessed by the willingness of the participants to attend, speak frankly, agree and disagree, and also by many requests for its transcript, encouraged us to develop the Witness Seminar model into a full programme, and since then more than 60 meetings have been held and published on a wide array of biomedical topics.<sup>1</sup> These seminars have proved an ideal way to bring together clinicians, scientists, and others interested in contemporary medical history to share their memories. We are not seeking a consensus, but are providing the opportunity to hear an array of voices, many little known, of individuals who were 'there at the time' and thus able to question, ratify, or disagree with others' accounts – a form of open peer-review. The material records of the meeting also create archival sources for present and future use.

The History of Twentieth Century Medicine Group became a part of the Wellcome Trust's Centre for the History of Medicine at UCL in October 2000 and remained so until September 2010. It has been part of the School of History, Queen Mary University of London, since October 2010, as the History of Modern Biomedicine Research Group, which the Wellcome Trust

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<sup>1</sup> See pages 111–16 for a full list of Witness Seminars held, details of the published volumes, and other related publications.

funds principally under a Strategic Award entitled ‘The Makers of Modern Biomedicine’. The Witness Seminar format continues to be a major part of that programme, although now the subjects are largely focused on areas of strategic importance to the Wellcome Trust, including the neurosciences, clinical genetics, and medical technology.<sup>2</sup>

Once an appropriate topic has been agreed, usually after discussion with a specialist adviser, suitable participants are identified and invited. As the organization of the seminar progresses and the participants’ list is compiled, a flexible outline plan for the meeting is devised, with assistance from the meeting’s designated chairman/moderator. Each participant is sent an attendance list and a copy of this programme before the meeting. Seminars last for about four hours; occasionally full-day meetings have been held. After each meeting the raw transcript is sent to every participant, each of whom is asked to check his or her own contribution and to provide brief biographical details for an appendix. The editors incorporate participants’ minor corrections and turn the transcript into readable text, with footnotes, appendices, a glossary, and a bibliography. Extensive research and liaison with the participants is conducted to produce the final script, which is then sent to every contributor for approval and to assign copyright to the Wellcome Trust. Copies of the original, and edited, transcripts and additional correspondence generated by the editorial process are all deposited with the records of each meeting in the Wellcome Library, London (archival reference GC/253) and are available for study.

For all our volumes, we hope that, even if the precise details of the more technical sections are not clear to the non-specialist, the sense and significance of the events will be understandable to all readers. Our aim is that the volumes inform those with a general interest in the history of modern medicine and medical science; provide historians with new insights, fresh material for study, and further themes for research; and emphasize to the participants that their own working lives are of proper and necessary concern to historians.

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<sup>2</sup> See our Group’s website at [www.histmodbiomed.org](http://www.histmodbiomed.org).



## ACKNOWLEDGEMENTS

We are very grateful to Veolia UK, particularly to Mr Richard Kirkman and Ms Marine Savy, for their assistance in suggesting contributors for this Witness Seminar. Many thanks also to the participants who provided archival material that unfortunately cannot be published in the volume due to space and copyright, but will be deposited with the records of this meeting in the Wellcome Library, London (Archives and Manuscripts, GC/253).

We thank Ms Lynda Finn, who conducted additional interviews with several contributors to this Witness Seminar. The transcripts of these interviews will be available at [www.histmodbiomed.org](http://www.histmodbiomed.org).

As with all our meetings, we depend a great deal on Wellcome Trust staff to ensure their smooth running: the Audiovisual Department, Catering, Reception, Security, and Wellcome Images. We are also grateful to Mr Akio Morishima for the design and production of this volume; the indexer Ms Cath Topliff; Mrs Sarah Beanland and Ms Fiona Plowman for proofreading; Mrs Debra Gee for transcribing the seminar; Ms Caroline Overy for assisting with running the seminar and Mr Adam Wilkinson, who assisted in the organization and running of the meeting. Finally, we thank the Wellcome Trust for supporting the Witness Seminar programme.

*Tilli Tansey*

*Emma Jones*

*School of History, Queen Mary University of London*



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## ABBREVIATIONS

<b>C&amp;D</b>	Construction and demolition
<b>CIWM</b>	Chartered Institution of Wastes Management
<b>Defra</b>	Department for Environment, Food and Rural Affairs
<b>EU</b>	European Union
<b>GLC</b>	Greater London Council
<b>ISWA</b>	International Solid Waste Association
<b>MRF</b>	Materials recovery facility
<b>NRA</b>	National Rivers Authority
<b>RDF</b>	Refuse-derived fuel
<b>SRF</b>	Solid recovered fuel
<b>WRAP</b>	Waste and Resources Action Programme



# INTRODUCTION

## QUESTIONS, QUESTIONS ...

*How does waste and resource management after 2000 compare with how we dealt with waste in 1960?*

*What progress has been made in those decades?*

*What can be learnt that will inform further progress, given that there is still much to be achieved in moving further towards an economy that delivers the twin benefits of increasing society's shared wealth with minimal resource waste, pollution, and negative global, climate change, and impact in the future.*

The discussions of the recent Witness Seminar are recorded here with great care, and demonstrate how a transformation has already occurred in waste management, but with further stages still to come and be completed. An impressive array of thoughtful experts were engaged in the seminar, each of whom has made a real difference in improving waste management over recent decades. Together, they shared analyses and memories of the industry and reflected on fascinating insights they and their peers contributed to that transformation locally, nationally, and by the European Union, over the last half century.

The analysis takes us back to the beginnings of the 1960s, and charts a long environmental transition.

## IN THE 1960s WE 'NEVER HAD IT SO GOOD' (BUT NOT ON WASTE)

At the beginning of the 1960s, Britain, like other advanced industrial countries, was experiencing rapid economic growth when additional waste generation and pollution was outstripping the country's capacity to manage it without serious environmental damage. The infrastructure and waste methods and capacity that had been set up to protect public health over the previous century were no longer coping, and the lack of effective government regulation and interventions was becoming increasingly exposed. In that poorly regulated environment, neither industry nor consumers had sufficient incentive to protect our environment. Spending more would cost businesses sales, and the dominant philosophy was 'Cheapest Available Technology Not Involving Prosecution', which accelerated avoidable pollution and damage. Voices opposing change also resisted compelling cases for regulation.

The overriding waste method, with some notable exceptions, was fairly uncontrolled landfill. Like most of the previous century it was 'shift it, bury it and forget it'. However, that was no longer acceptable as relatively inert, homogenous waste had been replaced by a multi-material mixture of advanced industrial production and burgeoning consumption, accompanied by an increasing array of hazardous wastes generated because of inadequate controls and legislation, and without any effort towards the precautionary principle of having answers before the new wastes and pollution were created.

Politicians and the UK Government did not regard environmental protection as greatly important, except when forced by overwhelming evidence to act on the deaths caused in London, or other big cities, by air pollution or when particular chemicals were proven to be deadly even though there were equally effective alternate technologies available. Law makers had other, greater priorities for them, for the public, and for business. No laws also meant little guidance, and all the UK waste management books and advice which were informing the daily actions of industry and waste businesses in the 1960s could be contained on one large shelf.

## HALF A CENTURY OF PROGRESS

Our country had salvaged anything and everything in World War Two, but had to relearn what 'reduce, reuse and recycle', and sound resource management actually meant from the 1980s onwards. Even the word 'recycling' is only recorded by dictionaries as entering common use in the year 1960. Interventions were largely after damage had been caused, not before it could be averted. Problems arose, necessary change was identified, and sporadic improvements occurred. Leading organizations and individuals implemented far better practice, and it was shared and more widely adopted.

Pollution control was similarly neglected with the never-to-be-fully-implemented Control of Pollution Act 1974, a sign that the need to protect the environment continued to take second place to the drive for growth. Examples of hazardous, poisonous, and explosive waste outrages, and leakages, continued: methane explosions and pesticides' wastes reaching drinking water, and hospital waste washing up on the Thames Estuary's beaches were not properly tackled until the 1990s as erratic controls continued at all stages of the waste chain.

The UK steadily shed its epithet of being the 'dirty man of Europe', and started to value and enjoy implementing the impressive range of European Union Directives and regulations that Brussels developed to achieve environmental progress in member countries. This eventually was the main prompt, in addition



to British public and political opinion, for increased regulation and fresh measures to cut pollution. The 1990s were a crucial start to the turnaround. Instead of 90 per cent plus of waste being dumped, as occurred in 1960, we started the journey to reversing those percentages. Instead of cowboys winning waste business, and then polluting land, air, and water, a new set of company leaders saw the opportunity for greater profits from recycling more, and for cleaner waste management; assisted by regulation, the Landfill Tax, and an increased focus at the 'front of the pipe', where avoidable waste is generated.

The UK Government took until 1990 to replace the Control of Pollution Act with the landmark 1990 Environment Protection Act; cradle-to-grave measures; a fresh focus on each hazardous waste; and the creation of a new national Environment Agency. The 1990s were to be a period of major change, meeting widespread public demands for environmental protection and 'green' initiatives. Public health for workers within the waste industry also made it on to the national priority list for the first time.

Britain continues to be a consumer society, just like it was in the 1960s, but a key difference, from the 1980s onwards, is that local and national capacity for environmental protection at last caught up with the imperatives of a country determined to become more and more affluent with each new generation. Now, half a century later, considerable progress has been made, and one indicator is the catalogue of over a hundred different major pieces of legislation; regulations; interventions; and financial incentives. Some of it is still unfinished business, slowed further by what is hoped to be a limited trend to reverse regulation, whether logical or not. Logical measures, widely understood to be vital to complete the cyclical use of resources, to minimise energy usage and emissions, and to cut pollution and climate change impacts are still to be effectively implemented, even now.

But we have come a long way. While it's not the perfect measure, there is now a room full of guidance, and technical advice, following so many Parliamentary Inquiries, Royal Commission reports, and new legislation on a plethora of dangerous materials and hazardous wastes. The journey to fully transforming our stewardship of resources with the production of minimal waste and emissions has been a long one, with much progress, but it is still incomplete.

**Lewis Herbert**

Cambridge, September 2015



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# THE DEVELOPMENT OF WASTE MANAGEMENT IN THE UK c.1960–c.2000

## Participants\*

Mr Timothy Byrne

Dr Chris Coggins

Mr Jeff Cooper

Mr Barry Dennis

Mr Steve Eminton

Mr John Ferguson

Dr Toni Gladding

Professor Jan Gronow

Mr Nick Patterson

Professor Judith Petts

Dame Joan Ruddock MP (Chair)

Mr Ernie Sharp<sup>†</sup>

Professor Tilli Tansey

Mr Paul Thornber

Professor David Wilson

Mr Mick Wright

Individual interviews were conducted with some participants subsequent to the Witness Seminar, available to download at [www.histmodbiomed.org](http://www.histmodbiomed.org).

<sup>†</sup> Died 3 February 2015

**Also attending the meeting:** Mr Mark Baxendale, Mr Martin Curtois, Ms Lynda Finn, Mr Richard Kirkman

**Apologies include:** Ms Debbie Doohan, Mr Terry Duggard, Mr Philip Gilmour, Mr Lewis Herbert, Mr Trevor Kimpton, Mr Ian Ross, Ms Marine Savy, Mr Bob Seear, Mr Malcolm Sharp

\* Biographical notes on the participants are located at the end of the volume



Figure 1: Professor Tilli Tansey

**Professor Tilli Tansey:** Ladies and gentlemen, I think we'd better make a prompt start because we've got an exciting afternoon ahead of us I hope. I'm Tilli Tansey and I'm the head of the History of Modern Biomedicine Research Group at Queen Mary University of London and we run these Witness Seminars on a variety of subjects in modern biomedicine. So today's meeting is somewhat of a departure for us, and we're really rather excited at moving into what, for us, is very new territory.

The purposes of these Witness Seminars are to hear and record the authentic voices: what happened at the time, what didn't happen, who made things happen? And today we're going to try and look as much as possible at waste management over the past 40 or 50 years. We're particularly interested in aspects of health and safety, but as effective waste management is essential to good public health that gives us a broad canvas for discussion this afternoon. There's a very broad outline programme with some suggested themes and pointers, but these are for guidance only.

We do think it will be useful if we can proceed in a chronological framework and please feel free to contribute your comments, your remarks, and your reminiscences at any point. This is a bit of a departure for us from our usual field of modern biomedicine and biomedical sciences, and we are very grateful for the help we've had in trying to locate and find you all. I'd particularly like to thank Marine Savy

For each period we would like to consider issues such as:

- Health and safety (operatives, legislation, public health)
- What kinds of waste? And their respective health risks
- Role of employers, unions, individuals (accidents?)
- Changes in policy

From 'Removal of refuse regulations, 1967' to 'The winter of discontent 1978–1979'

- 1965: formation of the Greater London Council and division of responsibilities for waste disposal to GLC with collection remaining to new larger London boroughs (pattern followed by rest of the country in 1974?)
- 1967: Civic Amenities Act/Removal of Refuse Regulations/Royal Society of Health conference on Refuse Collection
- 1967: Plastic bags/protective clothing introduced (following growth in organic waste)
- 1972: Bermuda village Nuneaton: cyanide scare – Deposit of Poisonous Waste Act
- Incinerators (destructors) – hazards for workers? Air pollution and explosion concerns; impact of other operations such as transfer stations
- Growth of environmental movement – impact on waste stream/consumer behaviour? Impact of protests by 'green' movement? Friends of the Earth, for example
- 1974: First Waste Framework Directive
- 1977: First bottle bank opens
- War on Waste – Warren Spring Laboratory project (waste as resource)

1980s

- Role of employers, unions, individuals – 1985: Dissolution of GLC – impact on London's waste operation/employees?
- 1988: Competitive tendering: privatization of local authorities' waste collection: impact on workforce (health and safety, working hours)
- Wheeled bins introduced – impact on manual labour/RSI?

1990s

- 1990: Environmental Protection Act
- 1995: Environment Act – formation of Environment Agency in 1996 and taking over waste regulation from local authorities
- 1996: Landfill Tax
- More widespread recycling

Beginning of the twenty-first century

- The beginning of the circular economy?

Table 1: Outline programme for the Witness Seminar<sup>1</sup>

<sup>1</sup> The outline programme was circulated to seminar participants in advance of the Witness Seminar.



Figure 2: Rt Hon Dame Joan Ruddock MP

and Richard Kirkman of Veolia, and our consultant Jeff Cooper.<sup>2</sup> Jeff was in the London Waste Regulation Authority, and he has been extremely helpful, not only in directing us towards some of you but also in suggesting our Chair.

Dame Joan Ruddock is the MP for Lewisham Deptford. I know she'll need no introduction to anyone here: she was responsible for putting through a very important Private Members' Bill against fly-tipping and was also a minister with responsibility for waste, so we can think of no one more appropriate to have than Joan this afternoon.<sup>3</sup>

**Rt Hon Dame Joan Ruddock MP:** Thank you very much Tilli, and I have to say you've just about said everything I might have said to this audience so I'm not quite sure what my chairman's remarks should be about except to say, of course,

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<sup>2</sup> Veolia is one of the main private sector suppliers of waste management and recycling services in the UK; see <http://www.veolia.co.uk/our-services/our-services/recycling-and-waste-services> (accessed 23 March 2015).

<sup>3</sup> In 2007 Dame Joan Ruddock MP, of the Labour Party, was appointed as a minister in the Department for Environment, Food and Rural Affairs (Defra) with a portfolio including climate change, waste and recycling, and biodiversity. She was subsequently transferred to the Department for Energy and Climate Change (DECC) when it was created in 2008; see her full biography on page 91. The Control of Pollution (Amendment) Bill was debated in the House of Commons on 24 February and 28 April 1989; see Hansard, volume 147, cc1278–317, and volume 151, cc1239–48, and the Control of Pollution (Amendment) Act, 1989; <http://www.legislation.gov.uk/ukpga/1989/14/contents> (accessed 22 August 2014).

we are an odd crowd, are we not? We're all utterly passionate about waste and there are many of our citizens who could not understand for one moment why we could be so passionate and so interested, but we are and many of you have spent your whole lives in this business and, of course, this is an opportunity for us all to be able to say what little role or big role we've managed to play. I did notice that we have no member of a pressure group among us and that is entirely regrettable. I do regret the fact that Friends of the Earth are not here, as a politician – perhaps even some of you will recognize the role that pressure groups have played in this field, and I do think they have lots of interesting stories to tell as well.<sup>4</sup>

My interest, as Tilli said, arose because I was confronted, on being made a new Member of Parliament, by constituents who had one of those problems that had gone on forever; nobody could ever solve it. I was supposed to be the miracle woman who would solve it. Well, amazingly, I did, but it's thanks to people like Jeff (Cooper) and John Ferguson here that I managed to get drafted a Private Members' Bill that led to the means of dealing with the carriers of waste and indeed penalties on those who were fly-tippers.<sup>5</sup> So that made me a great enthusiast for waste issues, and when I was offered a job in Defra (Department for Environment, Food and Rural Affairs), the new ministers came together and they sat round the table and, of course, they'd all decided what they wanted. Normally it's a big battle because everybody wants the subject that's getting the most favourable press coverage. And I immediately said, 'Well, I would like the waste brief.' Everybody looked at me, 'Oh, thank goodness, none of us want the waste brief! This daft woman has got it.' So that happened, and I have to say I sort of enjoyed the weekly battles in the media with Eric Pickles, about how often waste should be collected and his promise that, if he were in government, 'everybody's bin would be emptied every single week regardless' – so we had great fights about that, but that's just one of the penalties of being a minister.<sup>6</sup> Looking at everything we're going to discuss, it did occur to me that

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<sup>4</sup> For a history of Friends of the Earth, in the UK, see Lamb (1996).

<sup>5</sup> Mr Jeff Cooper and Mr John Ferguson were involved as officers of the London Waste Regulation Authority. Email from Mr John Ferguson to Ms Emma Jones, 18 May 2015. See also House of Commons Debate, 24 February 1989 vol. 147 cc1278–317; [http://hansard.millbanksystems.com/commons/1989/feb/24/control-of-pollution-amendment-bill#S6CV0147P0\\_19890224\\_HOC\\_9](http://hansard.millbanksystems.com/commons/1989/feb/24/control-of-pollution-amendment-bill#S6CV0147P0_19890224_HOC_9) (accessed 19 May 2015).

<sup>6</sup> See, for example, Roberts (2007), a newspaper article in which the Rt Hon Eric Pickles MP, the Conservative Party's Shadow Secretary of State for Communities and Local Government (2007–2009) was quoted as being critical of the Labour Government's policy on waste collection.



we are very much influenced – and this is, of course, not necessarily popular at the present time – by the European Union (EU) and European legislation. There are things, I suspect, this country was pushed into that we might not have so quickly embraced if it were not for the EU, so I hope we'll find a way of covering that. Now, I've never sat in on one of these meetings, let alone chaired one. You don't look like the kind of audience that is going to be heckling, but who knows? There may be some disagreements; Jeff and I spoke about our history over lunch, our shared history, my Private Members' Bill, and he was able to put me right on a couple of things, and he is right and I can say that. Maybe you won't have the same experience, you may end up going out from here absolutely finding that you didn't agree, but that is all to the good, I'm sure.

So, first of all, just to say that Lewis Herbert, who was to have spoken first, is unable to be with us. Jeff Cooper has stepped into the breach. Jeff has a history, of course, which is in the biographies,<sup>7</sup> but he is now an independent waste and resources consultant and he's also the editor of *Waste and Resource Management* magazine, and Jeff is going to introduce this session for us.<sup>8</sup>

**Mr Jeff Cooper:** Thank you very much. Let me say that it's a shame that Lewis Herbert couldn't be here today because Lewis produced the history of the Chartered Institution of Wastes Management looking at it over a hundred years, and obviously he's got a lot of skill and experience with regard to the historical perspectives.<sup>9</sup> Equally, each of you has got a lot of historical perspectives as well, so I'm just going to make a few very brief points with regard to the history of this subject and then move on to a couple of key issues, which I think we will need to address for the future.

Early in the nineteenth century, the borough of Brighton actually managed to sell its waste. The city sold its waste because most of the waste was actually manure from horses or human beings. It accumulated in the streets and eventually, by processes of natural decomposition, then became a fertilizer for the surrounding fields. Everything was very localized and everything could be utilized. So this was sold to local farmers at £20 a year in terms of the money that they paid to the Borough Council. Well, if we then move on a few years further, the problem that we had in the mid-nineteenth century was, because we had industrialization,

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<sup>7</sup> Brief biographies of all participants were available at the seminar.

<sup>8</sup> The journal *Waste and Resource Management* was first published in 2006 as part of the proceedings of the Institution of Civil Engineers; see Powrie (2006).

<sup>9</sup> Herbert (2007). See Introduction and biography on page 90.



Figure 3: Mr Jeff Cooper

the growth of large towns – nothing in comparison to the megacities we’ve got now but those megacities have the same sort of problems<sup>10</sup> – lots of waste being generated and nobody actually wanting the waste because, although it was still largely biodegradable, it was, on the whole, producing problems so it had to be got rid of. Hence we ended up with the first local initiatives to remove waste on a regular basis. Those initiatives continued until the 1936 Public Health Act, which introduced for the first time the need for local authorities to deal with waste. After that we had a whole raft of legislation, which we’ll be discussing, from the 1960s onwards.<sup>11</sup>

If we look at 1947, for example, the Town and Country Planning Act was, in my view, a critical piece of legislation because it meant that you couldn’t change the use of land without planning permission, and hence, although you had sites

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<sup>10</sup> ‘Megacities’, as defined by the United Nations, are those cities with 10,000,000 inhabitants, or more, or those predicted to have such future populations; see United Nations, Department of Economic and Social Affairs, Population Division (2006). See, for example, Bugliarello (2009) for a discussion of megacities and their wastes, and, for their waste management challenges and potential solutions, see the short film *Future Megacities: Solid Waste Management in Addis Ababa, Ethiopia*, freely available to download at <http://www.ignis.p-42.net/> (accessed 13 January 2015).

<sup>11</sup> See pages 12 and 39.

where refuse was being dumped, it was then very difficult to legally introduce further sites for dealing with waste.<sup>12</sup> For me, we've got to look at both the collection aspects and how we dispose of waste.

One of the things that was important, and which I think will come out from our discussions, particularly in the context of the 1960s and 1970s, is where we're moving to in the future as far as waste management is concerned in this country, because the pressure that is being applied to local authorities now in terms of reducing their expenditure is placing a big burden on their budgets, and one of the bits that is being squeezed more than any other is actually waste management services. So for me, not now, not for the next couple of years, but looking, say, at 2017/2018, I think if we carry on in the way that we're carrying on at the moment we may well end up in a situation where we have the kind of problems that we experienced in the 1960s.

I think this hearing that we've got today is actually quite pertinent for addressing where we should be moving in the future. So if the past is any guide to the future, I think certainly the early discussions we have regarding the 1960s and 1970s are actually quite critical in terms of the wide spectrum of waste management services that we're looking at, at the present time, and of where we might potentially end up in the future, particularly with things like weekly collections of waste and the Eric Pickles phenomenon.<sup>13</sup> That's all I want to say at this juncture.

**Ruddock:** I think Jeff is absolutely right to point to the future and to where we're going. I've just recently received a letter from the waste Minister saying what reductions are being made in budgets both nationally and at local level, and my own local authority, who we had hoped would move into food waste, has just put that on the back burner because they can't afford to do it, etc., etc.<sup>14</sup> So we were on a trajectory and it certainly has pretty much stopped, I think, in many areas. That is regrettable. But for now we're trying to capture what has gone before. So who would like to start? It is suggested that we start looking in the 1960s, that we try to bring in aspects of health and safety, the kinds of waste, the roles of employers, unions, individuals, and, of course, policy development and policy change.

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<sup>12</sup> Town and Country Planning Act 1947 (c. 51).

<sup>13</sup> See note 6.

<sup>14</sup> Rt Hon Dan Rogerson MP, Parliamentary Under Secretary of State for water, forestry, rural affairs and resource management. A copy of his letter to waste stakeholders, 6 November 2013, can be downloaded from Defra's archives at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/255508/waste-stakeholder-letter-131106.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255508/waste-stakeholder-letter-131106.pdf) (accessed 8 March 2015).



Figure 4: Mr John Ferguson

**Mr John Ferguson:** I think we should just immediately recognize that the formation of the Greater London Council (GLC) in 1965 led to a grouping of experts.<sup>15</sup> There was a department created, which had never been heard of before, called the Department of Public Health Engineering, and it embraced flood control, rivers control, and waste management: quite unique.<sup>16</sup>

It was backed up by departments such as the Architects' Department of the old London County Council – which became the GLC – and the scientific advisers department. The Department of Public Health Engineering had strength but also it had political will as well, and I think that this unique opportunity that was presented then to have expertise in the GLC and in this new department, extending over the whole of the Greater London area – though we had 33 different authorities – this gave it strength to work on through the coming decades on a good, professional expertise basis.

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<sup>15</sup> For the formation of the Greater London Council (GLC), its structure in relation to local government and its remit, see Porter (1994), pages 365–6.

<sup>16</sup> 'Before the formulation of the GLC, waste collection and disposal was administered by almost 90 local authorities, resulting inevitably in the overlapping of many procedures and a wide divergence in practice and investment. The 1963 Act left the collection of waste in the hands of the London boroughs and unified disposal under the GLC, creating as a result the largest waste disposal authority in Europe'; quoted from the description on London Metropolitan Archive's catalogue for the records of the GLC's Department of Public Health Engineering, reference GLC/HE/SW/OM. See also Local Government Act, 1963 (c. 33).



Figure 5: Professor David Wilson

**Professor David Wilson:** I didn't come into the industry until 1974 but I've done a lot of waste history work, particularly in the context of developing countries, as well as in Europe and the UK. I'd amplify what Jeff said at the beginning. Waste collection really came onto the agenda in the middle of the nineteenth century through public health concerns, with numbers of public health Acts brought in, driven by a series of cholera epidemics.<sup>17</sup> The first Public Health Bill in 1847 failed to get through Parliament despite a Commission report a few years earlier on *The Sanitary Conditions of the Labouring Population of Great Britain*, pointing clearly to lack of sanitation and accumulations of solid waste as the cause of cholera epidemics.<sup>18</sup>

It didn't get through because MPs said: 'Why should we pay to clean up for the poor? It's up to them to do it for themselves.' It was only another cholera epidemic later the same year that brought in the first Public Health Act in 1848.<sup>19</sup> We're not going that far back, but I think by the time we got to the 1960s little had changed. We had basically more or less solved the waste collection problem, although I guess some people will have things to add to that. But it was in the

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<sup>17</sup> See, for example, Wohl (1983).

<sup>18</sup> The Towns Improvement Clauses Act, 1847, 10 and 11 Vict (c. 34), however, legislated for sanitary reform, particularly in terms of sewerage, and, for example, the availability of water for street cleansing. Chadwick (1842).

<sup>19</sup> An Act for Promoting the Public Health 1848 (c. 63).



Figure 6: Mr Barry Dennis

1960s that the environment really came in as the new driver.<sup>20</sup> The first step of phasing out local dumps and moving to controlled landfill was brought in by the Control of Pollution Act of 1974, although the basic principles had actually been set out in the Dawes Report in 1929 – the timing of which was extraordinarily bad, being just before the Great Depression and then the Second World War.<sup>21</sup> The Bevan report in 1967 repeated more or less the same recommendations, which eventually came into the 1974 Control of Pollution Act but, as you know, we have moved forward since then in a series of steps.<sup>22</sup> The first step in the 1970s was very much phasing out the old uncontrolled dump sites.

**Mr Barry Dennis:** Yes, I think I understand where David's coming from but we have to understand that before the 1960s the sort of waste that was being disposed of by households was very much clinker; there wasn't food waste because most houses had a mincer and you had mince on a Monday because that was

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<sup>20</sup> In legislative terms, see the Civic Amenities Act 1967 (c. 69): 'An Act to make further provision for the protection and improvement of buildings of architectural or historic interest and of the character of areas of such interest; for the preservation and planting of trees; and for the orderly disposal of disused vehicles and equipment and other rubbish'; <http://legislation.data.gov.uk/ukpga/1967/69/data.htm?wrap=true> (accessed 25 March 2015). For the environmental movement in the 1960s in the USA, see note 44. See also Dr Toni Gladding's comments on pages 49–50.

<sup>21</sup> The Control of Pollution Act 1974 (c. 40) legislated for the control of waste disposal, water pollution, noise, atmospheric pollution, and public health. Dawes (1929).

<sup>22</sup> Bevan (1967).

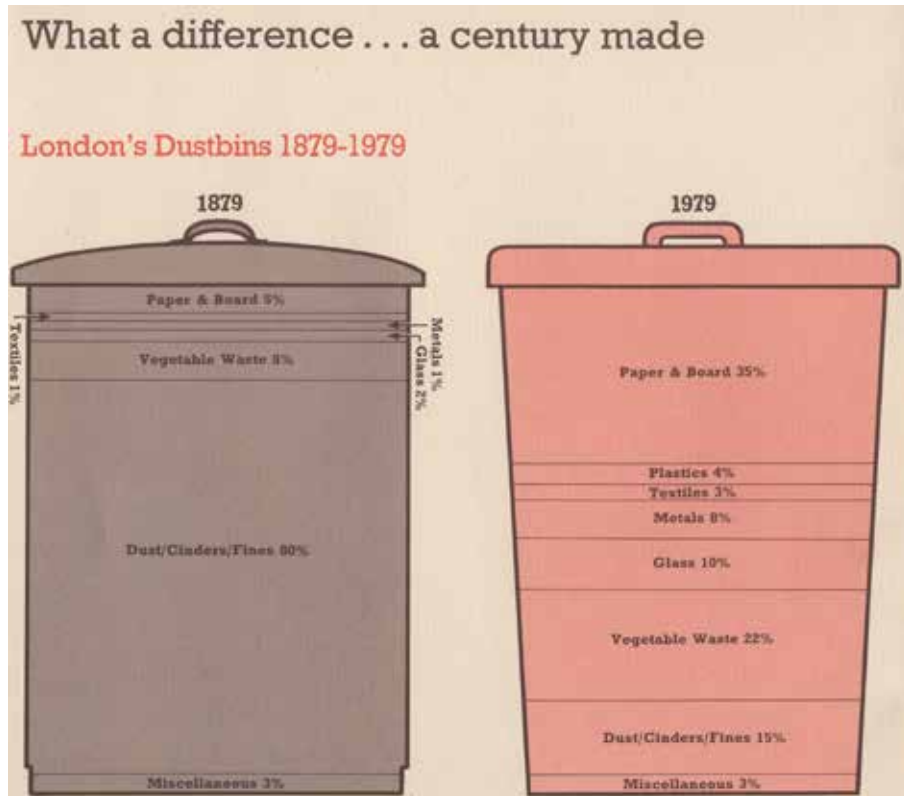


Figure 7: Greater London Council's *Talking Rubbish* pamphlet, 1980

left over from the Sunday joint.<sup>23</sup> The waste that was being produced, well from the Second World War, was very, very different and it started to change, I think during the 1960s when I started in the industry.

House refuse wasn't the sort of stuff we see now. Industrial and commercial waste was very clean and therefore it was going to landfills and certainly we operated a number in Hertfordshire and the people living around those landfills that we filled up and my grandfather filled up all those years ago, nobody is dying from any fumes, etc., or any problems. Waste was totally different and it was from probably the late 1950s through to the 1960s when society was a little bit more affluent that the type of waste changed. Food, for example: we had

<sup>23</sup> On food consumption and waste, see a discussion about the changing diet in England from the post-Second World War period to the early 1960s in Burnett (1966), pages 267–82. See also Gwynn (2015) for a popular social history based on the factual television series *Back in Time for Dinner* (broadcast 2015, BBC2), which drew evidence from the National Food Survey (1940–2000); specifically chapters on the 1950s and 1960s, pages 13–96.

## Changes in Composition and size of UK Household Waste Collections

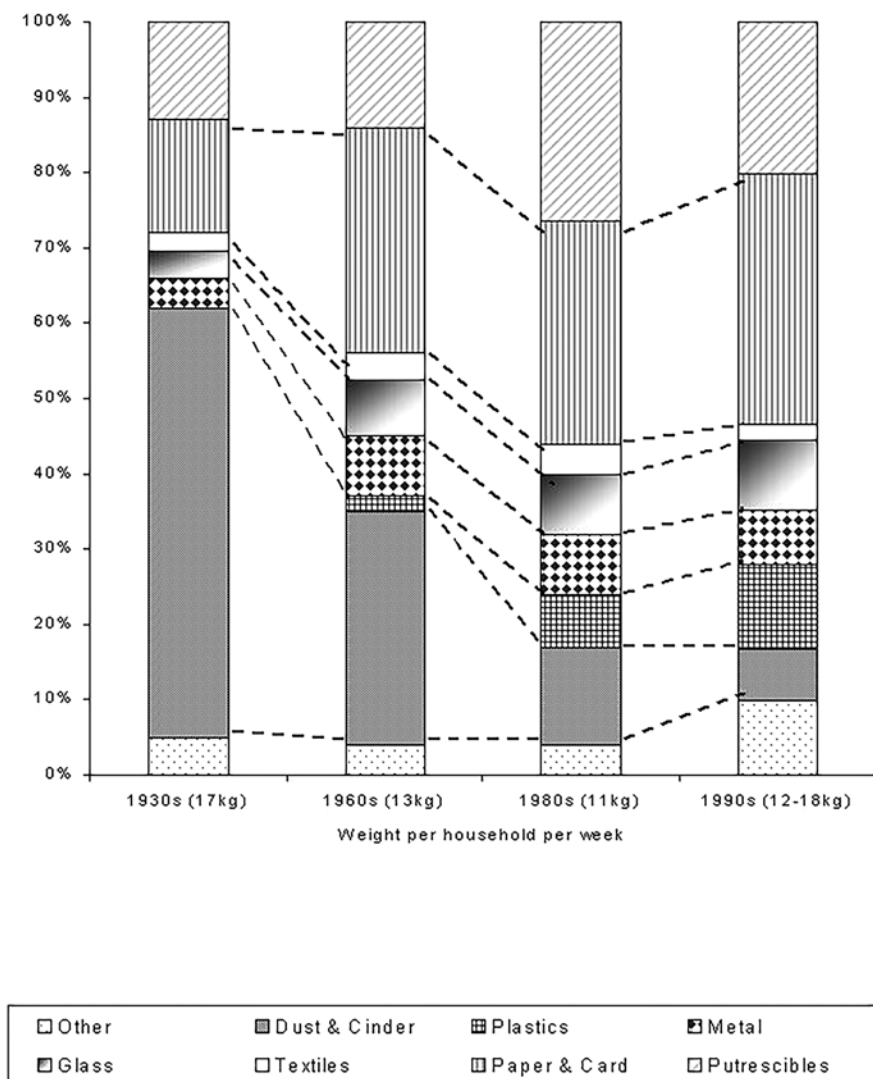


Figure 8: Changes in composition and size of UK household waste collections;  
graph by Dr Chris Coggins





Figure 9: Dr Chris Coggins

supermarkets, we had people buying different types of food.<sup>24</sup> I think one of the key drivers of the change that we had to have is the type of waste that we've all had to deal with.

**Ruddock:** How right you are. I remember the rag and bone men and the pop lorry that came to collect the pop bottles: Coronas.<sup>25</sup>

**Dr Chris Coggins:** I think the issue that I'd raise early on in this debate is: how does waste get on the agenda? I think my view is that if you look at international examples, and also the UK, it's when serious incidents occur. The Love Canal event in the USA meant a total change in how the USA looked at waste.<sup>26</sup> Lekkerkerk outside Rotterdam caused the Dutch to change, and in the UK mention was made of the Control of Pollution Act of 1974; that was a result of issues of incorrect disposal.

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<sup>24</sup> For a brief history of supermarkets in the USA and UK, see Steel (2009); pages 136–7, 140–1. See also Herbert (1998), page 38.

<sup>25</sup> Corona was a brand of soft drinks, packaged in reusable glass bottles that were delivered direct to households from the 1920s to the 1980s; see a blog post by Carradice (2012).

<sup>26</sup> Quoted from Division of Environmental Health Assessment (2008), page 1: 'Love Canal, a tract of land in Niagara Falls, NY, was the site of a landfill used for the disposal of some 21,800 tons of chemical wastes. The landfill was covered with soil in 1953, and houses and an elementary school were built on the area immediately adjacent to the landfill. The increasing appearance of visible seepage, noxious smells and other signs of chemical contamination in the landfill led to its designation as an Emergency Declaration Area and, in 1978–80, the evacuation of the residents from the surrounding area.'

So we've got Pitsea, we've got Birmingham examples, and then with landfill we also had Loscoe in the 1980s, in Derbyshire, and the explosion at a bungalow caused by methane from an old landfill site.<sup>27</sup> I can remember in some of my early consultancy for what was then the Department for the Environment, they said: 'Ministers will not be interested in waste unless there's an incident in their backyard.'

**Mr Ernie Sharp:** I don't know whether it's relevant going back a bit before 1967, I was a refuse collector in 1947 and the changes there came about because of the unions.<sup>28</sup> The unions began to flex their muscles. At the time it was a 48-hour working week, and slowly during the decade of the 1950s the hours were gradually taken down and down until I think they're now about 35 or something. There was very little protective clothing, we got two pairs of overalls and a donkey jacket. No boots. We worked in all weathers. We had the worst snow in 1947, we had the worst smogs in the 1950s and the Clean Air Act came in in 1956, which meant a complete change of what was in the dustbin.<sup>29</sup> Before that, newspapers and wood were burnt on the fire every morning and the ash was taken out when the dustmen came around. There were more incinerators in those days so more incineration went on.

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<sup>27</sup> For Birmingham, see, for example, a *Times* article concerning cyanide that was illegally disposed of in Wolston, near Rugby, and in Barnt Green, Worcestershire; Osman (1972). The Loscoe event occurred on 24 March 1986, and seriously injured three people in the bungalow where the explosion occurred, and led to an investigation of a nearby landfill site by the British Geological Survey; see Williams and Aitkenhead (1991). On Lekkerkerk, near Rotterdam, Dr Chris Coggins wrote: 'In 1981, drinking water and under-floor voids of a housing estate built on an old landfill site were affected by hazardous chemicals. Circa 1,600 drums of illegally dumped toxic waste were found on the site where 268 houses had been built: dyeline, toluene and other organic chemicals from the textile industry. A clean-up operation by the Dutch government in 1982 cost c.£70 million. This incident led to a review of such sites elsewhere in the Netherlands.' Quoted from a paper by Dr Coggins, 'Lekkerkerk, Loscoe and Love Canal: High profile examples of local environmental and social impacts of landfill', which was presented at a workshop at the University of Southampton in 2010, unpublished. It will be deposited with the archives of this meeting at the Wellcome Library, London, Archives and Manuscripts, GC/253.

<sup>28</sup> Mr Ernie Sharp was a member of the National Union of Public Employees (NUPE). See an interview with him conducted for the History of Modern Biomedicine Research Group, available at [www.histmodbiomed.org](http://www.histmodbiomed.org). For a history of NUPE, from 1928 to 1993, see Williams and Freyer (2011).

<sup>29</sup> The first section of the Clean Air Act 1956 (c. 52) legislated for the 'prohibition of dark smoke from chimneys'. For a history of air pollution in London, and the context for the Clean Air Act, see Brimblecombe (1987). The History of Modern Biomedicine Research Group convened a Witness Seminar on 'Air Pollution Research in Britain c.1955–c.2000', the transcript of which is scheduled for publication in 2016.



Figure 10: Mr Barry Dennis, Mr Ernie Sharp

But things were improved and so many things happened in the 1950s with normal life, with the death of the King, the Coronation, and all these things.<sup>30</sup> There were so many things that occurred then, it was a very important decade that affected all our lives and led to some of the things we're talking about now.

**Dennis:** It's interesting that Ernie mentions the unions, he's absolutely right because we as a thriving company were doing what we called then 'dusting contracts' for places like Finchley, Islington, Finsbury, and Bushey out in Hertfordshire. When the change came with the GLC that John (Ferguson) mentioned, a lot of these local authorities came into Hertsmere, in Hertfordshire, and you had the London Borough of Barnet, which took in Finchley and others around there, and the unions started to 'flex their muscles', to use Ernie's expression. That's when a number of the private companies, ourselves – Deards – and Drinkwater Sabey, we pulled away from doing those local contracts because we could find it was easier to work elsewhere with industrial and commercial waste and other contracts like the PLA (Port of London Authority) down in the docks, when the docks were docks, and we pulled away from household collections. That's when I think some of the costs started to come in to local authorities. I have the records at home of when we lost the Finchley contract and we were doing it, I think from memory, with four vehicles: there was the driver and two others. When Barnet

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<sup>30</sup> HM King George VI died in 1952, and was succeeded by Princess Elizabeth, who became HM Queen Elizabeth II, and whose coronation took place in 1953.



Figure 11: Mr Steve Einton, Mr Mick Wright, Mr Barry Dennis

took it over, the number of vehicles went up to over a dozen. That was when there was this big step change, and I think from the 1960s onwards, that's when things started to really develop as far as our industry is concerned.

**Ruddock:** Anybody from any other local authority or experience of local authorities? We've spoken a lot about London.

**Mr Mick Wright:** I'm doing this history of waste, or the history of rubbish, in Luton right from when it started as a public service in 1854, as I was encouraged by Lewis Herbert to do that anyway.<sup>31</sup> I'm not like Ernie, I can't remember the 1940s or even the 1950s, but I did start in the 1970s and certainly spoke to – this is probably hearsay or second-hand knowledge of what working in waste was like in the 1960s – but I gather from what everybody used to say that it was no different at the time I started in 1974 from the 1960s. Anyway, it seemed to be a bit diversified to me. You went to some areas and it was still clinker in the bins in the council estates, in those days when they had open coal fires. But you went down into the next estate where they had central heating and then it was already getting like modern rubbish. People just had a sack out by the front door or the front gate, very handy for us. Gradually all that clinker from the council estates disappeared as the local authority put central heating into the estates. But yes, yes, it's a long and varied history right back before 1960.

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<sup>31</sup> Further information about Mr Mick Wright's research on Luton is available in an interview with him conducted for the History of Modern Biomedicine Research Group at [www.histmodbiomed.org](http://www.histmodbiomed.org).

**Ferguson:** One of the great advantages of that period, 1960s to 1970s, was the fact that, particularly in Greater London, we had access to finance. That led to what I still think were professionally ambitious programmes for capital development. We had a shared opinion between the two major parties, Conservative and Labour, in London. In fact, they almost swapped every two or three years but the policy was united: we did want modern plants in London, we wanted to completely revise the transport systems. We were actually anticipating then such things as the need for the Civic Amenities Act, setting up civic amenities sites locally.<sup>32</sup> We thought we should have a ring of energy-from-waste plants. In fact, in the first ten years we only achieved the Edmonton plant.<sup>33</sup> Nevertheless, the thinking was going on and the planning was going on and with support both locally within London and, I must say, Dame Joan, the support from Parliament. There was considerable support from both the House of Lords and the House of Commons through, for example, the House of Lords Science and Technology Committee under Lord Gregson, and then your efforts in the House of Commons to get the Private Members' Bill forward.<sup>34</sup> This was a very inspiring time to be working in waste management because you could see things being planned ahead that we really needed.

**Wilson:** I think John's point there is an extremely good one. The political consensus when you're developing facilities is extremely important and helpful. As I said, I do a lot of international work and we're continually coming across examples of cities and countries where there are elections every four years and everything changes every four years, so when one Mayor starts doing something, starts building one set of facilities, you can guarantee that the next Mayor will change direction and do something else because he feels he has to. And you cannot build an integrated, sustainable waste management system in that way.

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<sup>32</sup> See note 20.

<sup>33</sup> The Edmonton solid waste incinerator, located in the London Borough of Enfield, opened in 1972, and is now known in the industry as an 'energy-from-waste' facility. See also an interview with Mr John Ferguson conducted for the History of Modern Biomedicine Research Group, available to download at [www.histmodbiomed.org](http://www.histmodbiomed.org).

<sup>34</sup> Lord (John) Gregson (1924–2009) was a Member of the House of Lords Select Committee on Science and Technology from 1989 to 1999. He was also Chairman of the Waste Management Industry Training and Advisory Board from 1985 to 2000. An 'Address by Lord Gregson to the Institute of Wastes Management, 92nd Annual Conference 1990', 12 June, will be deposited with the records of this meeting in the Wellcome Library, London, Archives and Manuscripts, reference GC/253.

The other point I'd pick up is one that Chris Coggins made before, about response to disasters.<sup>35</sup> One of the things that hasn't come up so far is the Deposit of Poisonous Waste Act, which was a reaction to a public outcry. I believe it's still the quickest Act of Parliament to go from conception through to enactment in ten days, in response to newspaper headlines of cyanide in drums being found on wasteland in the Midlands, near Nuneaton, where children were playing.<sup>36</sup> That was our 'near miss' if you like. In the USA when people talk about waste management and national waste legislation, they are talking almost entirely about hazardous waste.<sup>37</sup> In this country hazardous waste these days barely gets a look in, although it was actually the first thing to be enacted. I was involved in the first UN working group that drew up international guidelines on what legislation for waste management should look like, and the international legislation has very much followed what the UK put together so quickly in the Deposit of Poisonous Waste Act, with the exception of the 'pre-notification of the intention to move waste' which nobody else followed and which we ditched after 20-odd years.<sup>38</sup>

In the 1970s I was working at Harwell,<sup>39</sup> we did a lot of work on contaminated land. There were just a few sites in this country, like Love Canal and other uncontrolled hazardous waste sites in the USA. Jeff mentioned the Town and Country Planning Act: I gave a keynote paper in 1980 at the first US Superfund Conference in response to Love Canal, etc., because we were seen as being way ahead of the USA at that time.<sup>40</sup> The main difference I pointed to between these two countries was the Town and Country Planning Act: because we required planning permission from 1947, we didn't avoid all of the disasters, but we certainly had less than the USA. I remember a site beside the old Courtauld's

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<sup>35</sup> See pages 15–16.

<sup>36</sup> See, for example, Anon (1972) for details of illegally dumped cyanide at a disused brickworks near Nuneaton. Deposit of Poisonous Waste Act 1972 (c. 21).

<sup>37</sup> Professor David Wilson wrote: '[Hazardous waste in the USA is] a problem driven into the public consciousness by the health and environmental impacts of thousands of "uncontrolled hazardous waste sites".' Note on draft transcript, 31 May 2014.

<sup>38</sup> Professor David Wilson wrote: 'The Working Group on Guidelines for the Control of Toxic and Other Hazardous Chemical Waste was convened by UNEP and WHO in Garmisch-Partenkirchen, Germany, 17–20 March 1981 – I am listed as the Rapporteur.' Note on draft transcript, 25 May 2015. See Suess and Huismans (eds) (1983).

<sup>39</sup> Harwell Laboratories, Oxford.

<sup>40</sup> The Superfund Program was established in 1980 in the USA 'to locate, investigate and clean up the most hazardous sites nationwide'; see <http://www.epa.gov/region02/superfund/> (accessed 19 March 2015).



Figure 12: Professor Judith Petts, Mr John Ferguson

nylon factory in Carrickfergus in Northern Ireland, which dates from the 1950s, where people walking their dogs in the 1980s would get to the other side of the site without soles on their shoes.<sup>41</sup> But because of our planning controls we didn't have the same scale and we avoided the public health disasters.

**Coggins:** Picking up Mick's point about the coal-fired households changing to central heating, if you go back to the figures in the early/mid-1960s, coal-fired power stations produced 60 per cent of our electricity. During the 1960s we had North Sea gas and within five or six years the whole of the country converted from coal as a raw material to natural gas for central heating, and that meant big changes. I think what we're now seeing is an interesting development with the closure of a third of coal-fired power stations because of Europe. Some of those are now beginning to look into the potential for being multifuel power stations. So, at Ferrybridge, for example, one line will come on-stream later this year taking fuel from household waste in the form of refuse-derived fuel (RDF).<sup>42</sup>

**Professor Judith Petts:** I'd just like to follow on the theme of waste as a 'good' becoming waste as a 'bad' in the 1960s and 1970s. I think a figure in around 1910 was that Britain had more than 200 waste-to-energy destructors.<sup>43</sup>

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<sup>41</sup> See Thurgood (2007).

<sup>42</sup> The Ferrybridge Multifuel facility in Yorkshire is a power generation plant employing waste-derived fuels, waste wood, and biomass, operational from 2015; see <http://www.wtienergy.co.uk/projects/> (accessed 19 March 2015).

<sup>43</sup> For a brief history of incineration in London and the southeast of England in the early twentieth century, see Herbert (2007), pages 16–17, and for an account of the UK's 'destructors' in the 1920s, see Herbert (1998), pages 37–8.

Incinerators is probably slightly too glamorous a word, but town destructors across the country where waste was seen as a resource for heat generation. The Nottingham Plant was the first 'energy-from-waste' plant in the world; it opened in the 1870s. A plant is still on the site, and I think, still provides district heating to the St Ann's housing area.

But from the 1960s to 1970s, following David's discussion of Superfund and, Chris, your point about environmental pollution incidents, there was a strong growth in environmental awareness, very much coming from the action and environmental groups, particularly from the United States.<sup>44</sup> Environmental protection became the number one priority and, at the same time, the type of waste that was generated, and how it was being managed and used meant it became a 'bad'.<sup>45</sup> So waste turned from being a good to a bad and I think it's relevant to think about how we think of it now. Do we think of waste as a resource, or a good, or do we still think of it as a bad? And I think that sense of where the driving force of concern about the environment came from and how it then played out through into the 1970s, 1980s, and indeed into the 1990s right across Europe is a really powerful and important message.

**Tansey:** I just wondered if I could ask a question? I'm particularly struck by the point that Mr Sharp made about being given two pairs of overalls and a donkey jacket. When did that change? We've heard also about the change in the waste. So when did that change? When did you start getting boots and gloves?

**Sharp:** We got gloves later on but waterproofs didn't come in till the 1960s. I'm not sure when but they came in in the 1960s. As a dustman, if somebody threw a raincoat away we kept that on our trailer we used to collect salvage.<sup>46</sup> During my period at the end of the war, all local authorities, or most of them, were recycling, but because the cost of the trailer and recycling was so expensive they gradually stopped recycling and only those authorities who were close to a mill that would take the waste paper kept recycling. Gradually, they all stopped recycling.

**Ruddock:** That's interesting.

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<sup>44</sup> The publication of Rachel Carson's book *Silent Spring* about the negative impact of pesticides on wildlife is widely acknowledged as a major landmark in the birth of the environmental movement in North America, and elsewhere, Carson (1962). For the influence of *Silent Spring*, see Christie and Tansey (eds) (2004), in particular pages 12–14, 19–20. For a history of the environmental movement in the USA in the 1960s, see Rome (2003). In 1971, the environmental pressure group Greenpeace, for example, was founded in Canada; <http://www.greenpeace.org.uk/about/impact/history> (accessed 16 March 2015).

<sup>45</sup> See Wilson (2007), pages 199–201.

<sup>46</sup> For salvage collection, see Herbert (1998), pages 25, 32–3.





Figure 13: Mr Nick Patterson

**Sharp:** A point that John made about the Greater London Council: in the 1960s we changed from incineration quite a bit and we closed at least ten incinerators. I had five in my area that we closed down and it went to landfill because landfill was the least expensive.

**Ruddock:** Cheaper, yes, there's this theme always running through isn't there about cost, and perhaps Barry as a private operator has something to say on that?

**Dennis:** Ernie, you were obviously working for the wrong company because in 1938 when we were working for the Grand Union Canal Company we were supplying boots and I have it here: 30 pairs at 10 and 11 pence a pair, total cost for the year £16.7.6d.<sup>47</sup> So you should have come to work for one of the private companies, you would have had it a little bit better [laughter].

**Sharp:** You just brought something to mind: in 1950 the refuse collectors got a rise: 0.8 of an old penny per hour. [Laughter]

**Ruddock:** And lucky you were too, Ernie. [Laughs]

**Mr Nick Patterson:** I started at Westminster as a driver in 1968, and I can confirm that in 1968 we did very well in terms of protective clothing. We did have waterproofs, we did have two sets of uniforms, we did have two sets of

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<sup>47</sup> The equivalent of £16.37½p in decimal currency. Mr Barry Dennis provided an archival document from the Grand Union Canal Company, a copy of which will be deposited with the archives of this seminar at the Wellcome Library, London, Archives and Manuscripts, reference GC/253.

boots a year or when they wore out, and we did have leather jerkins. These were long, smock effects, highly prized. And a friend of mine who started with me still has his in the original wrapping, he never actually used it.

**Ruddock:** He never wore it?

**Patterson:** He never wore it, never wore it.

**Ruddock:** Not fashionable enough? [Laughter]

**Patterson:** Listening to what's been said about legislation and the GLC and all the other bits and pieces, I think, as a front line operator, one of the things that changed dramatically for me in the late 1960s was the equipment we were using and the manner in which collections were undertaken.

In Westminster, 95 per cent of the collections were in basement areas. The advent of the plastic sack revolutionized the way we collected waste because, instead of 'bin and return', it was one journey only: take the sack and leave the bin where it was. Also, the development of vehicles: when I first started we had the Dennis Paxit S&D (Shelvoke & Drewery), which were quite forward thinking at the time in terms of compaction vehicles, but the south of Westminster was still using the electric mechanical horses with barrier loaders at the back. So we were in north London – this was just after the amalgamation of Marylebone, Paddington, and Westminster – you know we thought we were quite sort of elitist if you like. Then, of course, in the late 1960s, early 1970s, when the new Geesinknorbas came in, the new compaction vehicles completely revolutionized the way collections were undertaken and the way in which refuse was dealt with. You got so much more waste into a vehicle. In the very early 1960s, I think it was, and I might be wrong, Westminster embarked on the very first wheel-less, wheeled bin collection.<sup>48</sup> There were dedicated dustbins that were collected by specialized vehicles, which actually tipped the individual dustbin into the back of the dustcart two at a time. Some of those bins are still actually in use, would you believe, in the St John's Wood area of Westminster. But that was the very first, I think, specialist domestic collection service in the country. It's up in the Midlands somewhere that's reported to be the first use of wheeled bins, but in terms of a dedicated domestic bin system that was one of the first.<sup>49</sup>

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<sup>48</sup> Mr Nick Patterson wrote: 'They were specially designed bins to be lifted and emptied by specialised lifting gear on refuse vehicles – much like today's wheeled bins but without the wheels!' Note on draft transcript, 6 May 2015.

<sup>49</sup> See note 54.



Figure 14: Mr Paul Thornber

**Mr Paul Thornber:** I've been listening very carefully to what people have been talking about and the themes. It strikes me that in waste in general there's nothing really new. My introduction into waste was actually from 1984, so I can't really comment too much from an informed point of view on the legislation and how it affected things up till then.

What I can comment on is, from the viewpoint of a child labourer, waste, recycling and reuse operative, insofar as when I was eight or nine in 1953 my father used to get me to take a jug up to the outdoor to get it filled with beer, thereby avoiding the need for bottles [laughter].<sup>50</sup> There was a need then to return empty bottles that we had to the stores.

Part of my duties as a very junior waste recycling officer was to drag the pig bin up the entry and leave it up the front for recycling food waste. But the really innovative process that I played a part in was battery reuse, by carrying a huge glass accumulator round to the local hardware shop for recharging where they would give you a charged one back and you left the one requiring charge. And

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<sup>50</sup> Mr Paul Thornber elaborated: 'An outdoor was the equivalent of a modern day off licence which was usually but not always attached to a public house and sold alcohol for consumption at home. I lived in Birmingham and have done all my life but spent some considerable time in the north of England where the title was also prevalent.' Emails to Ms Emma Jones, 5 May 2015.

I shudder to think what might have been going on at the back of that shop but suffice to say there were very strong odours coming from it. I make that point because whatever the results of the debate today are going to be, there isn't a great deal new in terms of waste; it's just smarter thinking.

**Wilson:** I have a question for some of the other contributors. We've heard about the change in the composition and nature of waste, particularly after the 1956 Clean Air Act.<sup>51</sup> The introduction of compaction vehicles: how far was that actually tied into the changing nature of waste? As you got less ash, more packaging in the waste, the density decreased, you actually needed compaction. I ask the question partly because many developing countries nowadays are being gifted waste compaction vehicles from Europe and North America that have been reconditioned, which are typically five to seven years old when they have reached the end of their economic life here. They are remanufactured and given by the graciousness of the Department for International Development, or whomever, to developing countries, often without the spare parts or the maintenance workshops they require to actually make them work and keep them on the road, but that's a different issue. My point is that they often don't actually need compaction vehicles, because the waste is already wet and dense, and if you compact it all you do is exceed the axle limits that are legal on the local roads. So were compaction vehicles already being used when our waste was dense and heavy, or was that a change that depended entirely on the new waste composition?

**Patterson:** You're right, David, it probably was to do with that, in a matter of maximizing payload as well, bearing in mind it was slightly different in those days, after 1967,<sup>52</sup> but to maximize payload: certainly that was the reason why most local authorities bought them because if you keep more on the vehicle it means less runs to the tip. As a little anecdote to that, I do know that just after the first dustmen's strike, a Geesinknorba refuse vehicle went to Covent Garden, the old Covent Garden as it was then, loaded up in the normal way, went down to the tip and when it got there had 21 tons on board, 21 tons.<sup>53</sup> So yes, you're probably right in terms of that particular instance of the density having a detrimental effect on axle weights on the road. That is an extreme case but it was, and it did also mean that refuse collectors loved them because you could really pack it on up to the max, and this was before onboard weighing systems, or whatever, so it was

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<sup>51</sup> See page 16 and note 29.

<sup>52</sup> See note 20.

<sup>53</sup> Mr Nick Patterson wrote: '...the reason [the weight] was significant was that the payload limit for that type of vehicle at the time was 7 tons.' Note on draft transcript, 6 May 2015.

very much nip and tuck. I don't think there was a major problem though; in those days I can never remember a dustcart being pulled over by what is now VOSA (Vehicle and Operator Services Agency) or the police to check its weight. They were just ignored, you know, just carry on with your work.

**Coggins:** One doesn't have to go to developing countries to see the trade-off of vehicles from the UK. Go to Malta and you'll find loads of refuse collection vehicles all with original livery from the UK.

Picking up on the strands that have already been discussed: the other development in the late 1960s/early 1970s is the replacement of galvanized dustbins partly with plastic sacks, then with plastic bins but more importantly with wheeled bins in Northern Ireland, then in Bury.<sup>54</sup> Then they crept around the country because local councillors thought, 'Oh we must have them because everybody else has got them.' But they were 240 litre sizes compared to 90 litre for galvanized bins, therefore they were a recipe for increased consumption. People just threw things away and that's where I think the vehicles started changing because, historically, as people have said, you had the old style refuse collection vehicle, which often had a trailer for the paper and cardboard but you can't have a trailer with a vehicle that wants to load wheeled bins on. So I think the vehicle changes were linked with bin changes and that was very much, dare I say it, publicity and promotion by German wheeled bin manufacturers.<sup>55</sup>

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<sup>54</sup> Dr Chris Coggins wrote: '240 litre wheeled bins were first introduced in the late 1970s in Northern Ireland and then Bury and led to the re-design of RCVs with rear bin-lift equipment (and end of recycling trailers) and greater use of RCV compaction systems. Waste composition by Warren Spring Laboratory in Bury and Nottingham in 1986–1987 showed waste per household increasing with wheeled bins from 10–12 kilos to 18+, with more garden waste, bulky items, cardboard, DIY and glass (items especially difficult to put in plastic bags).' Note on draft transcript, 3 May 2014.

<sup>55</sup> Dr Chris Coggins wrote: 'Sulo and SSI Schaefer were probably the most prominent German companies manufacturing wheeled bins, but there are now a much wider range of companies – walk down any street and have a look at the names. Bins were 240 litres, compared to 90-litre galvanized dustbins (household ashes were much more common before gas central heating). Bury, in Lancashire, was the first local authority in England to introduce them in 1983. With the increasing importance of recycling, a variety of sizes were introduced – 140 and 120 litre. Brown 240-litre bins were introduced for garden waste, especially after 2001 when the government brought in mandatory weight-based recycling targets in England, and garden waste was the obvious "heavy stuff" to collect. Sheffield, as the first UK Recycling City, introduced 50-litre blue boxes for recyclables. Some authorities give small bins for food waste (and kitchen caddies), separate boxes for glass containers, and some prefer plastic bags for other recyclables. The number of bins and colours, and the fact that many are left on garden paths or driveways has led to criticism because they blight the street-scape. Most local authorities offer three or four bins, with Newcastle-under-Lyme giving households nine bins, boxes and bags. More commonly, they are often termed "wheelie bins".' Note on draft transcript, 20 May 2015.

**Ruddock:** We're moving into that era and there's a bit of debate here, isn't there, of chicken and egg, you know: was it the vehicle, was it this, was it that? But clearly, that particular move, it's such a good point that Chris makes, in terms of the capacity of the bins.

**Wright:** Yes, I think there was a certain amount of complacency built up around weights of refuse vehicles, quite a lot of sites didn't even have a weighbridge so it was a free pass, wasn't it? Until VOSA did start stopping dustcarts and weighing them and there was trouble, big trouble, when they found out they were four or five tons overloaded quite often, and even more so on the back axle with the lifting gear on the back. Certainly, there was a big crackdown at our waste transfer station. Any vehicle that came onto the weighbridge that was overloaded was barred, put in cold storage until somebody came and took some of the weight off. So it hasn't lasted that long. I don't think there's anybody who overloads vehicles now; you just don't get away with it. Sorry, on the protective clothing, I know that Tilli was interested in protective clothing: the biggest controversy we had was we issued a blouson jacket and trousers, which were very smart, like Chelsea blue, you know. They were very smart and they were very well liked but unfortunately a refuse collector was killed in Luton, who just came from behind a refuse truck and walked straight in front of a car and the council said, 'No, no, we've got to go for much more high visibility than this', so you had to wear the high-vis. jacket.<sup>56</sup> But they wanted the refuse collectors to wear orange overalls. There was no controversy they thought until, of course, the fact arose that we had all these workers in Luton who came from Govern, and Port Glasgow, and Belfast who did not fancy the idea of wearing orange.<sup>57</sup> [Laughter] Nobody could understand this. I understood it very well, I was a senior shop steward for them at that stage, and said, 'No, no it ain't going to work. I think there'll be revolution on the streets. If you really want to wind up the dustmen, make them wear orange.'

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<sup>56</sup> Mr Mick Wright elaborated: 'The fatality I referred to occurred in 1985, when a refuse collector, working on a fairly quiet suburban road, walked from behind a refuse truck and was hit by a passing car. There was another fatality in Luton when, in very poor weather, a young collector decided to sit on the "rave", i.e. the metal bar at the rear of the refuse truck above the hopper where the bins are emptied into, but unfortunately he fell off the rave and was run over by the reversing vehicle. From this date (1980 from memory), the collectors had to wear a high visibility jacket, as the driver stated that he could not see the collector when he fell off the back.' Note on draft transcript, 8 May 2015.

<sup>57</sup> Orange is the colour associated culturally and politically with Protestants and Loyalists in Northern Ireland, and also in areas of Scotland, after 'William of Orange', the victor in the Battle of the Boyne, 12 July 1690.

**Cooper:** They could have pretended to be Dutch, of course. [Laughter]

**Wright:** Just on a technical point about refuse trucks and the waste situation: we had at least three visits in the 1970s that I can remember from places that became Moldova and Romania. Of course, we said to them, ‘What on earth do you want to come and visit us for? Surely you should be going to Germany and Holland and places like this?’ ‘Oh no,’ they said, ‘much too technologically advanced there, we want to go to a “truck and dump” country and you’re it. You get rid of so much of your waste in landfill and that’s the way we’ve got to go. We can’t afford all these energy-from-waste plants.’ So we were the learning point for the less-developed countries of Europe.

**Ruddock:** I think ‘truck and dump’ is a very evocative phrase. Just to pick up on what you said though about uniforms: what about the high-vis. jacket? Do any of us know if that came in at a particular point? Was it then taken up everywhere or at one particular authority? Because that must have been quite an important point I would think?

**Wright:** It was way past when the Health and Safety at Work Act came in, obviously that was 1974, but it wasn’t implemented until 1978.<sup>58</sup> So I think by about 1980.

**Ruddock:** As late as that? And only because of health and safety legislation?

**Wright:** I can’t remember people insisting on your protective clothing jacket before then and certainly just about every Local Authority I know now insists on it, particularly when the driver is getting out of the cab at a waste transfer station, where the accident record in the waste management industry is not good.<sup>59</sup> Since the UK has gone off mining, and quarrying has diminished, we now stick out like sore thumbs when it comes to accident-at-work statistics.

**Ruddock:** We’ll come back to accident rates, health and safety legislation, that sort of thing.

**Mr Timothy Byrne:** Just picking up on Chris Coggins’ point about wheeled bins and 240-litre bins, and the introduction of capacity. Reflecting on 20 years previously, when some of the local authorities, i.e. Bury, Preston, South Staffs, Nottingham City, had to go up to using vehicles of 32 tons, four axle with a capacity of 26 cubic metres to tolerate the excess amounts of waste in terms of tonnage being collected through the implementation of the wheeled-bin systems.

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<sup>58</sup> Health and Safety at Work etc. Act 1974 (c. 37).

<sup>59</sup> See Dr Toni Gladding’s comments on page 84.



Figure 15: Mr Timothy Byrne

This was simply because the traditional, smaller vehicles of 15 cubic metres, 18 tons, were totally inefficient for the volumes of waste actually being collected in line with the *Waste Strategy 2000*, as well as other recycling initiatives being implemented and introduced.<sup>60</sup> These strategies obviously reflected the massive amounts of tonnage of waste that had been collected through wheeled-bin systems inadvertently being sent to landfill, or obviously energy-from-waste installations over the last two decades.

**Patterson:** I could argue that case actually. I don't think the fact that we introduced 240-litre bins had anything to do with the fact that the waste went through the roof; it was because people's standard of living had changed. You can have a 240-litre bin but if you're not in that sort of lifestyle, if you haven't got waste to put into it, it will be half empty every time. The fact that they were full up is because people were living a completely different lifestyle; lifestyles had changed, the throwaway society that we became meant that people used the bigger bins because they had that much more waste to throw away; it wasn't the other way around. It wasn't because you got a 240-litre bin, 'Hey ho, let's fill it up and let's overload the vehicles.' That's not how it worked at all, certainly not in my experience anyway.

Where I worked, in Westminster, we didn't have wheeled bins but the tonnage still went through the roof. We still had to have the bigger vehicles and you know the 6 by 4s and whatever, to cope with it, and they're still not using wheeled bins

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<sup>60</sup> Department of the Environment, Transport and the Regions (2000).





Figure 16: Professor Jan Gronow

in Westminster. In support of what Chris was saying, there's also the old adage and any refuse collector will tell you, 'If you've got a block of flats with, say, six 1,100-litre bins, every time you go there, there'll be six full 1,100-litre bins and four bags on the floor. After a time they'll get wise to it and they'll give them an extra bin, so you've now got seven 1,100-litre bins, and every time you go there, there'll be seven 1,100-litre bins full up and four bags on the floor. [Laughter] That happens to be the case, so a little bit of support for Chris there anyway.

**Ruddock:** Was there ever any discussion about this? Did the unions discuss this? Did management ever discuss this? Was anybody raising what was happening here? This created more and more effort, more and more money, more and more vehicles, you know capacity issues. Was there any debate going on?

**Patterson:** No, and the reason for that was because, certainly as far as we were concerned on the front line, the technology kept pace with that. We were getting better vehicles and compacting more quickly, could put more on, they could carry more loads. We were using plastic sacks which, as I said, was one journey rather than two journeys. So, although there was an increase in tonnage, it didn't take you any longer to put an extra three or four tons on a day, and it really didn't because, yes, you're quite right, we'd have been screaming and shouting for extra men and this, that, and the other, if it had have been.

**Professor Jan Gronow:** I just wanted to ask, you're all obviously city workers. I was brought up in a village and was the technology equivalent in villages because I don't remember seeing any of this stuff? Was it just in the towns and cities that this was happening?

**Sharp:** The villages wouldn't have bothered about this technology because they had a tip down the road and it wasn't worth doing anything else.

**Dennis:** Yes, I think Bushey in those days, Jan, was a village way back in the 1940s and 1950s out in Hertfordshire and, you're absolutely right Ernie, because the landfills – the tips as we called them then – were so close. I think the issue that Nick and to a degree Chris have raised about when the vehicles started to change and when the type of waste changed, we've only been talking about household waste here, we haven't even talked about commercial/industrial, which has changed tremendously, but the household waste started to change in the 1960s. People had more money, the waste changed, and that's when we realised that the vehicles had to change because in those early days the dust lorries went straight to the landfill, and that stopped. The dust lorry never went over a weighbridge in those early days because landfills didn't have them; they just drove in, tipped, and came out. It was only when the tonnages started to rise and then, certainly, as John (Ferguson) will know in Barnet and Finchley, we had transfer stations at Summers Lane and that's when it all started to get weighed. We realized you couldn't send the vehicles to landfill any more, we had to do something about it, and that's when we started bulking household waste into 65-cubic-yard articulated lorries to take it to the landfill out at Cole Green, in Hertfordshire, or into Essex or wherever.

**Coggins:** In terms of facts: I managed a project in the late 1980s where we monitored waste in Nottingham: we monitored the waste composition, we monitored the civic amenity sites, now often referred to as household waste recycling centres, for a year and a half before they introduced wheeled bins and a year and half after they introduced wheeled bins. The average material going into the bin, from a household, went up by 50 per cent and the composition changed and was dominated by rubble, bricks, cardboard, and glass, which don't fit well into plastic sacks. That's all documented, and, basically, other surveys around the country confirmed that if you introduce wheeled bins, you're going to get at least 50 per cent extra household waste out.<sup>61</sup>

**Byrne:** Just on Chris' point, that really refines why some of the city councils and Metropolitan Borough Councils went for four-axle vehicles, not so much

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<sup>61</sup> The following, internal, consultancy reports were commissioned by the Department of the Environment: Coggins P C, Cooper A D. (1988) Nottingham Surveys: Pre wheeled bins; Coggins P C, Cooper A D, Brown R W. (1988) Nottingham Surveys: The impact of wheeled bins. Final report and technical data appendix.

because of the composition but because of the uncompactable elements of the waste that were going into the wheeled bins. Obviously, on a smaller vehicle, the vehicle would be full in half the time it would normally be when collecting domestic waste, hence the reason for going for bigger capacity to cater in the interim for this increase in uncompactable and non-municipal type waste which, as Chris said, can be civic amenities' waste, glass, green waste, anything really that could fit into a 240-litre bin. You know, it was an innovation in its time and it was an invitation for the public's desire to put anything they deemed fit into the bin to get rid of it at the cheapest possible cost.

**Wilson:** Again, a question for the group: it's very difficult to manage anything if you don't have the data. My understanding, and I'd welcome someone to corroborate this, is that we didn't actually weigh all waste arriving at every delivery point across the UK until 1993. Up to that point all waste data in the UK was a guess. I did a study for the EU in 1990 and we looked at waste levels rising between 1980 and 1990, and in most countries levels increased by up to 30 per cent, but in the UK they appeared to have increased by much less, by perhaps 6 per cent, because our guess in 1980 was 6 per cent less than our guess in 1990.<sup>62</sup> [Laughter] But, so we've said, waste per capita increased dramatically between 1960 and 1990. We didn't actually weigh all waste over that period. Does anybody have any data that we can use to monitor that and, if so, outside of the meeting I'd be very interested in seeing it. Similarly, waste composition changed a lot. When I did my PhD on strategic planning for municipal solid waste management starting in 1974, one of the things I picked up, and which I subsequently threw away, much to my consternation now, was a computer printout from Birmingham City Council showing annual waste composition survey results over the period from the Second World War up to 1974.<sup>63</sup> They were from quarterly waste composition surveys, which stopped in April 1974 because when the West Midlands County Council was formed they couldn't afford it and the unions stopped them doing waste composition surveys.

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<sup>62</sup> Environmental Resources Limited (1992). *Quantification, characteristics and disposal methods of municipal waste in the community – technical and economic aspects*. Report prepared by Environmental Resources Limited (ERL) for the European Commission.

<sup>63</sup> Wilson (1978). His thesis formed the basis for a monograph; see Wilson (1981).

**Sharp:** The GLC weighed all its waste in the 1960s.<sup>64</sup> Until that time, the vehicle would go to the landfill site and as the operative drove through the gate, he would hold his hand up to signal five tons or something like that. [Laughter] And one of the first things we tried to do was to get the weight and I think you'll find that the tonnage for London was 3.3 million tons; that was weighed annually for household waste that the GLC handled. The other point I wanted to make was on what Chris said about bins and vehicles. The changes in both of these items were very important. A bin, when I was carrying it, weighed 24 lbs and the weight inside averaged about 24 lbs. The next thing that came along was the galvanized iron bins that were lighter, then paper sacks came from Kent. They weren't much of a success. Then came plastic bags. And then came aluminium skips: the dustman would carry and tip the dustbin into the aluminium skip and carry it all the time. So bins are an item of their own going from A to Z, and the same with vehicles. In Lewisham, we had the horse and cart, and the boroughs of Lambeth and Southwark all had horses and carts too. Only a few, the Pagefield system in which the horse tows a trailer cart, low loader, and then a mother vehicle comes along, unloads an empty one, winches the full one up and takes it to landfill or wherever.<sup>65</sup> These were still in operation in 1955 in Lewisham, two of them in the main shopping area. But if we take vehicles starting from then and going back up to what we were talking about now, we had a Fore and Aft tipper vehicle that you just filled the back up, turned it upside down, and the refuse fell to the bottom. They had various sizes but they weren't big enough eventually, and to get more in we used to send somebody up the top when it was tilted up to jump the refuse down. We had moving floor from Glover Webb, where the driver came up and wound the handle.<sup>66</sup> Every time the back was full up he wound it a bit more further to the front. And to get

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<sup>64</sup> Professor David Wilson: '[The development of weighing regulations] was a process, with the GLC as one of the leaders – when you built a new waste facility then it was good practice, certainly by the time of the 1974 Control of Pollution Act (COPA), to install a weighbridge – the GLC pioneered this when they took over responsibility for waste disposal in London in 1965. This may have been included in some of the detailed regulations introduced under COPA, and laid before Parliament at intervals over the following 20 years – the waste (facility) licensing regulations were first introduced in 1977, and were updated several times prior to 1993, so I am not sure if or when installing a weighbridge became a statutory requirement.' Note on draft transcript, 25 May 2015.

<sup>65</sup> Mr Malcolm Sharp wrote, on behalf of his late father: '[Pagefield] was a system of relaying horse-drawn collection vehicles which, when filled, were drawn up onto the back of a lorry to be taken to the tip.' Note on draft transcript, 5 July 2015.

<sup>66</sup> For a brief history of Glover Webb, and moving floor refuse vehicles, see <http://www.classicrefusetrucks.com/albums/GL/GL1.html> (accessed 19 March 2015).

more on we had a pole with a blade on the front, a long handled pusher to push the refuse up to maximize the payload, and then the driver had to wind it out when he got to landfill. We had another vehicle that we used to walk into, tip the refuse, take two pins out, and move the barrier back and put more refuse in. The vehicles with compaction systems, which could compress more materials, came along after that. Then there was the ‘shark’ that had something like a meat mixer where it screwed the refuse in and you screwed the refuse out. You went from all horse and carts right up to when the wheeled bin came in and then the back lift came on, and axle weight became important. Nine tons on an axle, over that you were in trouble. I think I’ve said enough.

**Ruddock:** Well, I wanted just to ask you one question that was in this progression: particularly as people got more waste and obviously you were lifting very heavy weights, was there a lot of pressure from the unions to make changes, to make households change because of the actual physical effort of having to lift these bins?

**Sharp:** Only the hours.

**Ruddock:** Only on the hours? You’re all so strong.

**Sharp:** It was fatigue. I think we used to do something like 100 or 120 bins per man per day. I think they do about a thousand now, don’t they, with the wheeled bins? It was tiring. The union put all sorts of pressure on for various things, the clothing, and the hours, and rates of pay and so forth, and things changed gradually as all these things I’ve been talking about, the bins and the vehicles, it all sort of moved up gradually a bit at a time. We got more refuse but it got lighter, so we needed more capacity and then when we got more capacity and we needed something to compress it to increase that capacity, so each thing moved up. Then, of course, health and safety came along and that put the kibosh on a lot of things.<sup>67</sup>

**Coggins:** A comment on the weighing issue. Yes, many local authorities didn’t bother to weigh, there was no need to: landfill was cheap and cheerful. I can remember an episode when more than one local authority asked for information about the weight and they said, ‘Yes, we weigh the lorries for one week in January and multiply by 52.’ [Laughter]. And I said, ‘Well, that doesn’t really give you a good impression of the year’s waste.’ Following our discussions, they then started weighing the vehicles in July and multiplied the January figure

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<sup>67</sup> Health and Safety at Work etc. Act 1974 (c. 37).

by 26 and the July figure by 26 and that was how they came up with a figure. Again, I did a lot of work and David asks about the data, apart from CIPFA (Chartered Institute of Public Finance and Accountancy) itself, I've possibly got the most complete record of CIPFA waste statistics going back to the 1980s, and we did a lot of work for government back in the 1990s evaluating the data.<sup>68</sup> It was fascinating. When you looked at CIPFA statistics, you'd find that in the 1970s and 1980s when they were published in the municipal journal, the local authority treasurers would always look to see where they fitted in the list. There were two variables that the treasurer was interested in: how much it cost and what the weight was. The treasurers knew what the cost was. How would you manipulate the data to give you lower cost? You'd overestimate your waste. And we did a lot of statistical analysis of that data and we found that, basically, what you were finding was that lots of local authorities were rounding the data up to the nearest ten, or hundred, or thousand tonnes year after year because that meant that they could please their treasurer by showing a low cost per tonne, and that's a fact.

**Dennis:** You're absolutely right, Chris, because the point was that they may have gone over a weighbridge, but the big question was how many wheels were on the weighbridge? It was a question of whether you were possibly, and I must be careful here under Chatham House rules, whether you were buying or selling depending on how many wheels went on the weighbridge. I don't think the tonnages really started to get accurate until the Landfill Tax came in in the 1990s, that's when it really started to, when tonnages started to bite.<sup>69</sup> Up until then we talked about weight but it didn't really have a great deal of bearing on anything.

**Ruddock:** Well, since it is confession time, I'll just remind people that it is Chatham House rules and you will have an opportunity to correct the record if you've said something you wish you hadn't.

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<sup>68</sup> This data was compiled for internal reports. In 1994 for Defra: a) *The Collection and Validation of Household Waste Statistics: incorporating Sections on CIPFA Waste Statistics, the Use of IT in Waste Management, and a Review of Weighbridges and Software* (52 pages). Report prepared and written by R W Brown, approved by P C Coggins; b) *The National Household Waste Analysis Programme: Selection of Waste Collection Authorities for Sampling of Weight Data*, 20 pages, report prepared and written by R W Brown, approved by P C Coggins. In 1995 for the University of East Anglia and DoE/ETSU, *Further Evaluation of CIPFA Waste Collection Statistics*, 58 pages, report prepared and written by R W Brown, approved by P C Coggins.

<sup>69</sup> Landfill Tax Regulations 1996 (SI 1527).

**Wilson:** I was looking at a report this morning, which was encouraging developing countries to use weighbridges, and the caption on the photograph said, ‘But you need to be careful what you weigh and avoid weighing people unnecessarily.’ And the photograph was a vehicle sitting at a weighbridge with somebody sitting on top of it. We’ve been talking a lot about collection and vehicles and composition, and so on, and our period currently includes the 1970s up to 1980. In that period following the 1974 Control of Pollution Act there was a major change in standards applied to landfill. Mick said we were known as the ‘truck and dump’ country and we got a reputation for being the ‘dirty old man of Europe’ by doing so much landfill and so on. In that period, the extensive research in the UK pointed to the benefits of dilute and disperse landfills rather than containment landfills which, had the science been followed, would have been quite a sensible approach; but it was a sensible approach only if the site was well controlled and managed, which was always a major caveat and was, in my opinion, our undoing.<sup>70</sup> It was why, eventually, the EU Landfill Directive ruled out co-disposal of hazardous wastes, and the dilute and disperse philosophy, and everything else.<sup>71</sup> It’s a very important phase of waste history from 1974 up to around 1990, and there are people like Jan in the room who know a lot more about that than I do.

**Ferguson:** Quickly supporting Ernie: it’s quite true that as a policy in the GLC from 1965 onwards we wanted to have a weighbridge weighing for every output of waste at our stations because, increasingly through 1965 to 1975, we almost phased out all landfill within the Greater London area for municipal waste. Thereby, we had to look elsewhere, well beyond the boundaries of London, well into what we used to call the southeast of England. That meant we had to have very good statistics on both the weight of waste and the analysis of waste and I pay tribute to Arthur Higginson – Higgie – who was the pioneer of quality waste analysis because you need that as well as your data on weight.<sup>72</sup> But the need for weights and cubic capacity was also so necessary for us to work with our colleagues in other parts of England. This led, going back to what David was saying a moment ago, to the absolute necessity for much higher standards

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<sup>70</sup> See, for example, Osmond (1982).

<sup>71</sup> European Union Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste; [http://europa.eu/legislation\\_summaries/environment/waste\\_management/l21208\\_en.htm](http://europa.eu/legislation_summaries/environment/waste_management/l21208_en.htm) (accessed 20 March 2015).

<sup>72</sup> Mr Arthur Higginson is discussed further in an interview with Mr John Ferguson conducted for the History of Modern Biomedicine Research Group, available to download at [www.histmodbiomed.org](http://www.histmodbiomed.org).

of landfill management. In fact, it was the only way we could persuade counties like Bedfordshire, Kent, and Essex that the quality of the landfill being proposed and carried out within those regions would be such that their people who lived nearby landfill sites would not be affected by such things as methane and so on. That led to a considerable amount of research into the lining of landfill sites to capture methane and so on, which in turn led to us being a country showing standards of landfill management that countries like the United States, Australia, Turkey, and Lebanon were all very interested in, because that was the only answer for the majority of their wastes, both municipal and commercial/industrial. So the UK was actually setting a path towards international standards.<sup>73</sup> This happened really because of our absolute necessity in London to find a home for the quantities of municipal wastes that were rising.

**Ruddock:** In a way John has taken us into that, to where we were stopping to think entirely about rubbish, disposing of rubbish, and beginning to think that waste is a resource, which, of course, had been the original thinking in the 1940s, and 1950s, so that cycle coming round.

**Wright:** Yes, the wheeled bins in Luton were introduced in a trial plastic sack collection area in 1982 and they were sold on the basis that you had this huge, great bin and you could top it up with all your garden waste and rubble and so on and so forth. We didn't appreciate the fact that we used to get the occasional short engine or a coal bunker put into the bins, it didn't do the trucks a lot of good. You asked earlier if the unions and management were interested, well, we certainly were interested when Luton Borough Council wanted to convert the whole of the town to wheeled bins because up until then we'd had a driver and four collectors on a crew and, of course, you went to a driver and two collectors. So then it was, 'Well, if you're going to save all this money, council', even though you've got to buy the bins and they were reckoned to last 20 years although most of them are at least 35 now and we've hardly replaced any of them. We knew they were going to make a huge saving, that's really why the Council wanted to do it. So we wanted, actually, to split the saving with the Council to which, of course, the response was 'you were lucky to still have a job' and all that stuff. But we did actually do a deal with them in the end.

On the data thing, well, yes, it's a bit of a chequered history but we did have a waste destructor in Luton, which everybody assured me we didn't have, never had one, and Luton was never on the list of towns with a destructor. From 1905,

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<sup>73</sup> See, for example, Westlake (1995). See also Professor David Wilson's comments on pages 52–3.



we had a waste destructor in Luton and that had a weighbridge, so even though it was horses and carts they were all weighed before they went in. Various places didn't have a weighbridge to start with but then it was noticed that the tip was being used up much faster than it should have been and there was some seepage going on from various industries like the car fluff and so on and so forth was rolling up in bulkers, which weren't going through the books. And then swiftly, weighbridges suddenly seemed to be affordable after all that was going on, so they were installed at all the sites that we had anything to do with right from the 1980s. There are gaps in the data but it does go back a long way.

**Cooper:** Just before we do move on, one of the things that we haven't discussed, and it's one of the few terms that we in the UK have given the international waste lexicon is, of course, the civic amenity site, and it's staggering when you go around the world that the phrase 'civic amenity site' is being used by countries that haven't got English as their first language. We ought to look at this particular aspect because, frankly, it's one of the interesting developments in the 1960s because it was recognized that in order to combat fly-tipping – dumping of waste by households because they couldn't get rid of the old sofa or they couldn't get rid of items such as garden waste – that we had this move through Duncan-Sandys MP to have these sites set up by local authorities so that people could dispose of, essentially, bulky waste.<sup>74</sup> In the case of the GLC, one of the other things that we did was to have dedicated space for abandoned vehicles as well. Some of these abandoned vehicles were really nice vehicles that a lot of people were very interested in driving out of the site. They were worth several thousands of pounds. Sadly, however, despite my best efforts we couldn't persuade our local finance people within the GLC that they should sell them on so we had to destroy them, which was pretty devastating both for me personally as a resource-oriented person, and I think to several of the staff who had hoped to get these vehicles quite cheaply. Anyway, I thought that we ought to examine the place of civic amenity sites in terms of how we deal with waste because it's not just the collected waste, it's also the waste that people are taking to the civic amenity sites that we should look at quite closely because there's about 20 per cent of our household waste that actually goes through these sites. And I know Chris has been doing research on this for a very long time because that's how he and I first came together in the 1970s when he started work in this area, as did I.

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<sup>74</sup> Lord Edwin Duncan-Sandys (1908–1987) was a Conservative MP from 1935 to 1945, and 1950 to 1974, and founder of the Civic Trust. The debate of the Civic Amenities Bill on 4 May 1967 in the House of Lords, prior to the Civic Amenities Act, is available at <http://hansard.millbanksystems.com/lords/1967/may/04/civic-amenities-bill> (accessed 20 January 2015). See also note 20.



Figure 17: Waste oil container, civic amenity site in Hove, Brighton, c.1980

**Coggins:** A couple of comments on the civic amenity sites: the 1967 Civic Amenities Act, as Jeff said, sponsored by Duncan-Sandys, the conference that launched part three of that Act, dealing with civic amenity sites, had 850 delegates. I don't know if anybody has seen the report of that?<sup>75</sup> I've got copies electronically and on paper and, somebody asked me once, 'how much work have you done on civic amenity sites?' I counted up, and between 1984 and 1997, we conducted over 30,000 site interviews in the UK. All of that data is there in the background, and, yes, the Nottingham case I mentioned earlier. We also monitored the sites and, obviously, with wheeled bins more people stopped going to civic amenity sites. Whereas 30 years ago, probably there might have been an oil bank, there might have been a metal recycling, there might have been some glass banks, but the majority of waste going into civic amenity sites 30 years ago was waste; 80 per cent plus.

It's interesting now that most civic amenity sites are quoting 60 to 80 per cent recycling. So there's been a significant shift and that obviously is related to government policy and whatever. But the final strand on civic amenity sites: I have a journal paper that was published in the late 1980s that basically said the

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<sup>75</sup> Civic Trust (1968).

French invented what they called *déchetteries*, which were the equivalent of civic amenity sites, and I spent a long time arguing with the authors of that paper that they'd been in existence in the UK for 20 years previously.<sup>76</sup> But going on to the next stage: *War on Waste*, the Green Paper?<sup>77</sup> If you look at that, in 1974, 40 years ago, they were talking about the circular economy.<sup>78</sup> They didn't call it the circular economy, but they talked about the 'resources' that were available in household waste.

**Ruddock:** Right. Who is going to take us into this new era?

**Ferguson:** In the late 1970s there was enthusiasm for civic amenity sites as such because of dumping, but it led on subtly to where human beings, the people who actually went in there, started talking to one another and then it led on a little bit further to: 'Now why are we just dumping this stuff into huge skips? Couldn't we perhaps save some of this?' And, all due to Jeff Cooper and his enthusiasm, I can remember when we started to say, 'Well, let's have coffee bars at our civic amenity sites.' We actually did that and people could have a cup of coffee and a little bit of social exchange as well as recycling. There is always some bulky waste that has to be dumped and not recycled, as we can see. It's 80 per cent recycled now, you know, still a bit left over. But it was this interchange among people, I mean I'm on a little local group, and waste is a very interesting subject, it still is. Emotionally, people want to recycle their waste, they want to recycle food waste and so on.<sup>79</sup> But way back then this enthusiasm started to come over.

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<sup>76</sup> See, for example, Hertzog *et al.* (1988).

<sup>77</sup> Department of the Environment, Department of Industry (1974).

<sup>78</sup> The philosophy of the 'circular economy' has its origins in the late 1960s and early 1970s, and is primarily concerned with waste reduction and reusing materials. Historically, among other individuals and organizations, the concept of the circular economy is associated with the design and economic theories of the former architect Walter Stahel, founder of the Product-Life Institute in Switzerland in 1983; <http://www.product-life.org/en/node>. The circular economy is also associated with the theories and work of the Club of Rome, authors of the *Limits to Growth* report, which has influenced contemporary debates about sustainability; Meadows *et al.* (1972). A key contemporary protagonist in the circular economy movement is the Ellen MacArthur Foundation, founded by the former British champion yachtswoman, Dame Ellen MacArthur; <http://www.ellenmacarthurfoundation.org/circular-economy> (websites accessed 27 April 2015).

<sup>79</sup> There is extensive academic literature in the disciplines of psychology and anthropology on human attitudes and behaviours relating to recycling, and associated environmental issues. See, for example, Dersken and Gartell (1993) and Ojala (2008).

**Wilson:** I've written a number of things looking at how our modern waste management systems have evolved since the early 1970s, since the Control of Pollution Act in this country, in particular, and I distinguished three phases.<sup>80</sup> The first phase was what I call the control phase, eliminating open dumping, bringing in controlled landfill sites and at the same time, with incineration, introducing rudimentary pollution control, and electrostatic precipitators to remove the dust nuisance. And that was happening during the 1970s but the phases overlap, so it extends into the 1980s. The second phase I call the technical fix, ramping up controls. It's basically increasing the standards and this is where, someone has already mentioned, the importance of European Directives bringing in standards.<sup>81</sup> And, for landfill, this also meant standards for leachate and gas control.<sup>82</sup> Originally the liners used in landfill sites were one layer, then they became two, and then became three, and you got top layers, etc.<sup>83</sup> Similarly, part of this phase for incineration would have been the 1996 Incineration Directive that required multiple air pollution controls and gas cleaning and resulted in dioxin emissions plummeting from municipal solid waste: that control phase started around 1980 and is still continuing, arguably, but was essentially the 1980s and part of the 1990s.<sup>84</sup> And then, sometime in the 1990s, you got the third phase, which was where we reinvented recycling and started looking at landfill diversion and recycling targets and then landfill taxes and all of that sort of thing.<sup>85</sup> And recycling, we've talked about recycling, Ernie has said it declined after the war but by the 1960s, 1970s, data is poor, but recycling rates were probably around 5 per cent plus or minus. They were still 6 per cent in 1997, I believe. And it was only after then that policy started driving recycling rates up. So two points there: one – we reinvented recycling because the standards of landfill and incineration had gone up so much that they

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<sup>80</sup> Wilson (2007).

<sup>81</sup> See Dame Joan's comments on pages 6–7.

<sup>82</sup> Landfill Directive 1999/31/EC.

<sup>83</sup> See, for example, Westlake (1995).

<sup>84</sup> European Union Directives on the incineration of hazardous waste, 94/67/EC, and household waste, 89/89/369/EEC and 89/429/EEC were replaced by the single Waste Incineration Directive, 2000/76/EC, which was itself subsumed into the Industrial Emissions Directive, 2010/75/EU; see <http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm> (accessed 25 March 2015).

<sup>85</sup> For the Landfill Tax see note 69. Recycling in waste management during the 1990s is discussed in Craighill and Powell (1996).

became extremely expensive and it took Landfill Tax to tip the balance a bit. But recycling became competitive with other sinks for getting rid of waste. It was not economic in its own right as a standalone economic activity as the rag and bone man did it. If you increased the rag and bone man's standards he couldn't have done it competitively against local authorities, but for local authorities it has gradually become cheaper than some of the alternatives. In terms of the timescale that we're talking about, it is those two steps of the initial control phase in the 1970s, and the gradual ramping up of technology standards in the 1980s that are important, before we get on to the reinvention of recycling, which really started in this country from 1995 onwards.

**Dennis:** Going on from Chris' point and also from David just now about recycling, people think recycling is something new. I've said from the conference table many times over the years that recycling is the second oldest profession in the world. We've been doing it for generations but people never knew about it. You couldn't get into a tipper truck back in the 1950s and 1960s. If you tried to get in as a passenger you couldn't because the driver had his tot and the rag men had wire – we were recycling then.<sup>86</sup> Then, when we were clearing contracts for local authorities, when we had to empty flats and things like that, take the furniture out, the furniture and stuff never went to the tip. All our drivers, every tipper driver that was doing this knew exactly where to go and sell the wardrobe and chest of drawers. We were very happy then, as companies to allow that; that was their bunt. A driver would drive around clearing umpteen cubic yards of rubbish because that's what we did during the day on certain local authority contracts for the housing departments, never went near a landfill in years. They were recycling. So, when David and Ernie talk about when recycling started again, I don't think it ever stopped. It's just a very sexy word now and it's right up at the top of our agenda as an industry and we talk about resource management and not waste management.

**Ruddock:** Of course, our consumer society changed so dramatically, packaging changed so dramatically so that when we talk about more modern recycling it is not just about a continuation, it's about tackling a new source of waste isn't it? Because it's just phenomenal new sources of waste that we've encountered in more recent decades.

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<sup>86</sup> 'Tot' refers historically to bones specifically but in common usage to junk and generally unwanted waste from households and other sources, associated with 'rag and bone men', or 'totters'. Mr Barry Dennis clarified that 'tot' as he was using it referred specifically to scrap metal such as copper wire. Personal communication, Mr Barry Dennis, 5 May 2015.

**Petts:** I think that with the issue of recycling, we now have to put on the agenda the power of the local voice in driving, certainly in the 1990s, strong pressures on local authorities to include much higher recycling targets in their waste management strategies. Certainly in the European directives in the 1980s and actually in the 1970s – for example, the Waste Oil Directive of 1975 – had all the right words about recovery and recycling.<sup>87</sup> But the proof of the pudding really came in the challenge to action from local communities. Take Hampshire, for example, where I was involved in evaluating public engagement.<sup>88</sup> In 1991/1992 the County tried to develop a new 400,000 tonne incinerator in Portsmouth, but the proposal was killed by public opposition. So Hampshire had to revisit its whole strategy for managing municipal waste. With a chalk geology, the County had relatively little landfill, and incineration had been an important element since the 1960s.

The failure at Portsmouth led the County to go out to public discussion on the future. It was the first local authority to adopt an in-depth public engagement approach using community discussion fora around the need for facilities. This was a costly approach but it was essential to understand what the public thought should happen to waste in Hampshire. The main answer was: ‘We don’t want one big plant, but three small plants.’ The County adopted this strategy and three new plants, each below 180,000 tonnes, were built. The community also put significant pressure on Hampshire to set a really stretching recycling target. At that time the public wanted a 50 per cent target for recycling. A 25-year waste contract was let in a new partnership between the private sector – Onyx as it was – and the County, to deliver and run the facilities that would achieve the targets. That drive for the local authority to set a very stretching target, which was virtually impossible in those early days to get anywhere close to, went alongside this public demand for a change in waste management. And we saw this new approach to engagement spin out across a number of local authorities – an approach which involved people much earlier in questions of the need for facilities, not just questions about where to locate them.

Now, in Hampshire we saw a local authority that had incineration so I want to put another thing on the table, which is the whole thing around dioxins, incineration, and health, because there’s no doubt that was on the agenda as

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<sup>87</sup> European Union Council Directive 75/439/EEC on the disposal of waste oils, stated, for example: ‘Member States shall take the necessary measures to ensure that, as far as possible, the disposal of waste oils is carried out by recycling (regeneration and/or combustion other than for destruction)’; see Article 3.

<sup>88</sup> Petts (1995).

an issue. But for Hampshire there wasn't an option to have landfill and there was a very strong public voice that said: 'We should manage our own waste, we shouldn't send it next door to Dorset or Surrey or West Sussex.' So there was this tension around how waste should be managed within Hampshire, and even within the different regions of the County, and looking for the best options available for the local area. As I have said many times, incineration, dioxins, and health was not an issue raised by local residents in the first instance, rather it was raised by environment pressure groups, particularly Friends of the Earth and CAT, Communities Against Toxics, a national campaigning group.<sup>89</sup> For local residents, the health issues linked to incineration came almost as a surrogate for questioning the nuisance effects of incineration, such as huge numbers of vehicles if you had a large plant, all this sort of stuff. So the health dimension was very much a surrogate dimension, often driven by the national groups but counter to the local voice.

I've actually sat in a meeting where local residents have asked the national group representatives to leave because they didn't recognize or represent the local voice concerned with the nuisance dimensions of waste management and making sure that issue is covered. Obviously most people don't want an incinerator at the end of their garden. I've been asked that many times personally, 'Would you have one at the end of your garden?', and the honest answer is, 'No'. But that's because I don't like the look, traffic, and nuisance of an industrial facility, not that I would be worried about the health effects. So the way in which the public voice was brought into the discussion of waste and that drive and pressure for change, and, not least, increased recycling was important; in essence legislating for recycling when, as has been said, recycling was already happening.

'Integrated' waste management became the language of the 1990s, looking for the best way to integrate multiple modes of waste management to achieve the best outcomes. We saw Harwell and Department of Environment guidance come in on integrated waste management strategies, guidance to local authorities on how to develop these in partnership with the waste industry, and a whole change of reflection as waste became a public issue.<sup>90</sup> There was also a demand for people to have a say in decisions on the best way to manage waste locally, across multiple local authorities certainly from, say, 1993/1994 through to

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<sup>89</sup> For Friends of the Earth, see note 4, and, for CAT, see <http://www.communities-against-toxics.org.uk/index.html> (accessed 31 March 2015).

<sup>90</sup> Energy Technology Support Unit (1995, 1998).

2000, and beyond. I think we need to recognize the power of the public voice at this time when it was allowed to be heard and when people could bring their own personal stories of waste management into the picture.

One final thing to throw in, then, is that we have to understand how waste varies by household areas within local authorities. The local authorities, of course, know this once they start measuring and managing waste, and Chris (Coggins) will have seen surveys that help us to understand the diversity of waste within local authority areas.<sup>91</sup> I can remember vividly one public debate in Hampshire in the Winchester area. A member of the public from a lower socio-economic area came along to the public discussion that was dominated by voices from wealthier socio-economic areas. He listened intently for a long time, particularly to discussion of composting garden waste and taking waste for recycling. Finally, he said, ‘Can I tell you a story of my dustbin?’ We live on a council estate, we have no fresh food shops on our estate and I don’t have a vehicle so that we can drive to buy fresh food. Most of our food is in tins. On an occasional day, the local shop will get a lettuce in or a bit of old cabbage and we might be lucky, but most of what we buy is in tins. We have two dogs and we have four children and I can tell you at the end of the week our dustbin is full of tins. If someone could tell me what to do with those tins I would love to do something with them, but no one is offering to collect them from my door so they have to go in the dustbin.’ From such stories, it was clear people understood what to do and what was best to do but they couldn’t take action themselves.<sup>92</sup> This sense in which people from different socio-economic areas were anxious to do something became really powerful I would say in the mid-1990s.

**Gronow:** I’d like to agree with Judith over the issue of people being relatively happy to deal with their own waste, and I think you could see it with the old incinerators and with town gas plants. You could see how polluting they were, but there were lots of towns that generated their own gas and didn’t mind doing it because it was for them.

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<sup>91</sup> Dr Chris Coggins wrote: ‘In all, we conducted over 30,000 questionnaire interviews at civic amenity sites and in shopping centres from 1983 to 1997. As with many other questionnaires, these were tied to socio-demographic databases. Most researchers used ACORN (A Classification of Residential Neighbourhoods, but we also used MOSAIC (a development on from ACORN).’ Note on draft transcript, 15 May 2015. This research was commissioned by the Department of the Environment for internal use, and is unpublished; Coggins P C, Antwi M, Brown R W. (1994) Consumer behaviour and participation in recycling. Perspectives on waste generation and waste arisings.

<sup>92</sup> See note 79.



Then I have a completely different perception about recycling coming from the Government's side. As far as I'm concerned, we had four goes at introducing recycling in this country and obviously the fourth one worked, and it was related to the public being not only interested, but it was also very often, I have to say, our political masters as well. Virginia Bottomley made a lot of difference to the public in relation to waste management.<sup>93</sup> She sort of, not popularized it but she was popular herself and that's when recycling took off as far as I remember.

The other thing that isn't related but is related to what we have been talking about, I suggest but I might be wrong, is that one or two of you are being a little bit early over landfill gas because I was actually employed to set up a research programme on landfill gas as a result of the problems of the migration off site of gas, not the migration of gas into the atmosphere as now.<sup>94</sup> So I'm suggesting that's mid/late 1980s.

**Ruddock:** Virginia was certainly the Minister when I was doing my Bill in 1989.

**Coggins:** In terms of dates, in 1989 Sheffield was designated the first Recycling City in the UK and introduced segregated bins for recycling.<sup>95</sup> Milton Keynes followed in early 1990, the same year as the Environmental Protection Act and when *This Common Inheritance* was published.<sup>96</sup> I've been told an apocryphal story that the, then, Prime Minister (Margaret Thatcher) quoted at one meeting that she was going to set a target of 50 per cent recycling of household waste and she had to be corrected, it had to be 50 per cent of the recyclable fraction, which meant a target by 2000 of 25 per cent of household waste.<sup>97</sup> The actual figure, whether you talk 1999/2000 or 2000/2001, was just under 10 per cent. Then, in the 1990s, the Government got local authorities to produce recycling strategies, recycling plans and after 2000 when the target had not been met, the

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<sup>93</sup> Baroness (Virginia) Bottomley of Nettlestone was Parliamentary Under Secretary of State, Department of the Environment from 1988 to 1989.

<sup>94</sup> Department of the Environment (1986); Williams and Aitkenhead (1991).

<sup>95</sup> Coggins, Cooper and Brown (1991) explain: 'In May 1989 a Canadian-style pilot kerbside collection scheme using a 50-litre "blue box" for the householder to place all dry recyclables was introduced in Sheffield as part of the UK 2000/Friends of the Earth initiative in making Sheffield "Recycling City". This recycling initiative subsequently spread to two other cities, Cardiff and Dundee, and Devon County', page 22.

<sup>96</sup> Environmental Protection Act 1990 (c. 43). Department of the Environment (1990).

<sup>97</sup> Baroness (Margaret) Thatcher (1925–2013) was Prime Minister of the UK Government from 1979 to 1990.

Government in its wisdom introduced mandatory targets for local authorities. That's where another story starts, in the sense that if you look at the data from 1996/7 through to 2011/12 there are detailed statistics available for materials collected for recycling.<sup>98</sup> In that period, the recycling rate increased to just over 40 per cent but the big increase was garden waste. Garden waste now accounts for over 40 per cent of the recycling figure in England. For whatever reasons, Defra has decided not to publish the breakdown for 2012/13 and I think it's because the garden waste has increased again and therefore it's this issue about giving people not just a black wheeled bin for rubbish, they're giving people 240-litre bins for garden waste and people are filling those up week by week.

**Sharp:** Every time somebody speaks something else crops up. Jeff was talking about abandoned vehicles. I was a foreman of the Lewisham depot and my son learnt to drive on abandoned vehicles. [Laughter] And in Star Lane tip in Bromley there must be at least 100 cars buried on the landfill site.

**Ruddock:** Wow.

**Sharp:** Because they couldn't do anything else with them. That's one point. I was Assistant Area Manager in the south area of London when the Civic Amenities Act came in so I set up sites in all south London.<sup>99</sup> The land was given to us, or allowed to us, from the authorities and our idea was, rubbish goes in there, but as soon as they started putting hardcore in, the local authority put the bar up and then we had to start limiting what type of vehicle came in, and from then on it was whether the waste was commercial or not and so forth. In 1988, when we closed the gates of the civic amenity site then the rubbish would pile up outside. So when we would come in in the morning we would have to clear rubbish before we could get into the depot. But of course, luckily, it's changed.

Gas. The first gas I think you will find we monitored in this country was done by the general manager from the GLC at Merstham tipping landfill site – Croydon's refuse went there. It's a chalk pit, and the gas would go up through the fissured chalk into gardens at the top of the hole. It was a big hole and

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<sup>98</sup> For statistics on England's recycling, see Defra's webpage ENV18 – 'Local authority collected waste: annual results tables, see Household Recycling by Material and Region, England: April 1996 to March 2010', and for 2011 to 2012, see 'Local authority collected waste from households from January 2010 to March 2014 – England data'; <https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables> (accessed 1 April 2015).

<sup>99</sup> See note 20.

there was a road up the top and the gas went through and killed the roots of the plants, mainly gooseberry bushes got crusts on them and that sort of thing. By then it was too late to line the site and so we had to be careful of what we put in there. We actually rolled chalk down and did a roll chalk base for the landfill. So that's gas.

The other one, getting along a bit more to these days about recycling and that, from the 2000 EU regulations, we did door stepping and all this sort of thing to try to increase recycling, so that had a lot of effect on what's happening now.<sup>100</sup> But in 13 years we haven't progressed very far. I've always said that 40 per cent recycling from household refuse is an optimum. Above that it becomes more expensive and possibly not worth doing. So 40 per cent recycling, 40 per cent incineration, 10 per cent composting, and if you want to get rid of the last 10 per cent without going to landfill, use the lasers.

**Ferguson:** Ernie's absolutely right about Merstham and our experience there then led us on to be absolutely certain that we had to do something about our landfill at Aveley, in Essex. We needed £2,000,000 for the equipment to control the gas emissions at Aveley and I had to get this from someone. Well, the leader of the GLC was Ken Livingstone and I always remember having to go to his office because this was to get money from the private sector, we couldn't get it from the public sector and I wondered what he would say. But Ken Livingstone took the decision within a few moments. He said, 'Right, that's a danger, you've explained that. Right, go and seek the money on the market through our own treasurers.' I thought that was just an example, going back to the beginning of the discussion, about how important it is that there's a rapport between professional teams and the political teams because they have to work together.

**Ruddock:** Let's try and move on a little bit further. We don't absolutely have to bring ourselves up to the present time but it would be quite nice to see how far we can get. We were discussing whether recycling was a new phenomenon or whether it was a continuum and looking at where we might be going in this rather new period.

**Dr Toni Gladding:** We should not underestimate the year 1967 because we've spoken about the Civic Amenity Act but that's also the year that weekly collection of waste from households was formalized. And the reason they did

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<sup>100</sup> In the UK, the 2000 EU regulations became the *Waste Strategy 2000 for England and Wales*; see Department of the Environment, Transport and the Regions (2000).



Figure 18: Dr Toni Gladding

that was the Ministry of Housing and Local Government published a paper where they said the life cycle of a fly is 10 to 14 days, therefore you should collect waste weekly.<sup>101</sup> So that's where it all came from.

Anyway, moving on to the late 1980s, the one thing we haven't really mentioned, I think, is the community sector because there's no doubt that they brought a lot of recycling done by other persons to the fore. There was informal recycling by the waste collectors, but they started formalizing things like collecting paper to make money from it, then collecting tins, and then suddenly everybody realised if they collected paper and tins, there's all this plastic and what's going to happen to all this plastic? So that's when the community groups really got going, and local authorities started putting conveyor belts in buildings and balers and things like that and that was late 1980s/early 1990s. Milton Keynes and Sheffield did that, Oxford to some extent, Bath, and so all of these community groups sprung up to get value for materials. Then, really, it developed from there and was commercialized by the waste management companies. So the first purpose-built facilities to hand-sort this material and try and obtain value from it was when Milton Keynes had the first purpose-built materials recovery facility (MRF) in 1992.

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<sup>101</sup> Ministry of Housing and Local Government (1967). See also Gladding (2009), pages 7–9.



Figures 19 and 20: Milton Keynes' materials recovery facility, 2006



Figure 21: Mr Steve Eminton

**Mr Steve Eminton:** Following on from what Toni Gladding was saying, I think you mentioned we didn't have anybody here from the community sector or groups and I think, for the record, Friends of the Earth should be noted as doing a lot of work in the early 1980s and, in particular, it encouraged recycling.<sup>102</sup> I know you mentioned community groups but I think they have to be held up as the early instigators, and to some extent they were followed by Friends of the Earth, not particularly strongly in London, unusually, but certainly out in the shires to gather material. In London, my memory is that it was a lot of church groups, which actually started collecting used newspapers in the early 1980s. Church halls were used for raising money and that early collection of newspapers is perhaps a sign that some of the mills started to see the recycling material as a commodity.

**Wilson:** I think we have skipped a little bit over some of the 1970s and 1980s, and one thing I would say that I think is important, is that there was a lot of government funding for research and the evidence base for waste policy. From 1974 through to the late 1980s, there was the Landfill Research Programme, which was millions of pounds a year.<sup>103</sup> It was carried out by three research groups

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<sup>102</sup> See note 4.

<sup>103</sup> For a summary of the Landfill Research Programme see Stuart *et al.* (2002), pages 3–4; available to download from <http://www.envirobase.info/PDF/2013.pdf> (accessed 2 April 2015).

at the Harwell laboratory where I was sitting alongside a part of it, the Water Research Centre and the British Geological Survey. They did a lot of work on the science of landfill, which was world-leading at the time. They, I mean Harwell, also did a lot of early work on landfill gas.<sup>104</sup> As Jan [Gronow] said, the late 1980s was when gas control became compulsory,<sup>105</sup> but I remember in the late 1970s/early 1980s some of my colleagues at Harwell working on landfill gas and responding to incidents, and there was one incident in your part of the world, Judith [Petts], in Portsmouth. There was an explosion in some sort of social club that was used as an old people's club in the evening. This old lady, her new boyfriend didn't like her smoking so she went into the ladies loo to have a quick fag and the gas from the site that the clubhouse had been built on was coming up through the sewers and so she lit her match and the whole thing went up. She wasn't badly injured but my boss was on site for several months trying to sort it out.

Moving on to where we've got to now in the timeline: we've talked quite a lot about incineration. You may be familiar with a book called *Rubbish* written by Richard Girling for Eden Press and published in 2005.<sup>106</sup> He's got a chapter in the beginning on history, and he wrote about 200 to 250 waste destructors being built in England between the 1880s and the beginning of the First World War. He described each one as a 'mini volcano' giving out, I can't remember the exact words, a lava of black particles etc., etc., which is all probably quite factually correct. He then ended the sentence with a comma 'and therefore we should never build one again'. In my teaching I use two graphs from the Environment Agency: one is from 1990 that shows the dioxin emissions for the UK and, in 1990, 51 per cent came from municipal solid waste incineration.<sup>107</sup> They repeated the exercise in 1999, after the 1996 deadline in the Waste Incineration Directive for retrofitting of all existing incinerators with multi-stage gas cleaning. I reckon it cost about 40 million Euros per plant to retro-fit with gas cleaning equipment. The total dioxin emissions had reduced by 70 per cent, and of the 30 per cent remaining, municipal solid waste incineration was just 0.1 per cent.

**Ruddock:** Yes, it's amazing.

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<sup>104</sup> See, for example, Parker (1981).

<sup>105</sup> See Professor Jan Gronow's comments on page 54. Her Majesty's Inspectorate of Pollution (1989).

<sup>106</sup> Girling (2005).

<sup>107</sup> Department for Environment, Food and Rural Affairs (2002); see Figure 1 for both 1990 and 1991 dioxin statistics, page 12.

**Wilson:** So technically we have solved the dioxin problem from incineration. It is still brought up by environmental groups, etc., but the main issue with incineration or waste-to-energy as far as I'm concerned is when there are a lot of people trying to sell it in countries like India. Technically it can work and we have demonstrated that, but you need to know the composition of the waste, and the waste needs to be dry enough to actually burn, and not require supporting fuel; and you also need an environmental regulator that is separate, independent, which will ensure that the gas control equipment has not only been installed but will actually be used.

**Gronow:** Related to that, the IPPC (Integrated Pollution Prevention and Control) Directive actually brought a new dilemma for regulators in that the harmful substances could either go up the chimney, or they could be in the solid waste, or they could be in the liquid waste, and you could choose.<sup>108</sup> Before that it hadn't been integrated, so that was quite an important change and that was brought about I think by the IPPC Directive and the negotiations for it.

**Coggins:** Going back to Toni's [Gladding] comment about the community sector, I think there are a number of strands there that one can quote. There were groups working in London in the 1980s and I've got several of the reports and they were talking about 'cascading of resources', in other words collecting material from affluent areas and making it available for less affluent areas. So that's one example. The second example, when Sheffield was set up as Recycling City,<sup>109</sup> the plastics sorting plant was manned primarily by people with learning difficulties and there were a lot of criticisms at the time that this was cheap labour and it was exploiting people. And yet, people who otherwise might have spent day after day in a care home or in a residential centre were actually in a community where they could talk to other people, and whatever.

I think the third group of people that emerged in a formal way in the 1980s were also at civic amenity sites. Northamptonshire, for example, became concerned in the 1980s that a lot of totters were basically going onsite and taking stuff offsite.<sup>110</sup> So Tony Bispham, who was then waste manager at Northamptonshire County Council said, 'If we can't beat them, we'll join them.' He gave them the contract, so the civic amenity sites in the 1980s were actually managed by licensed totters who basically did a great job. We did some work in Derby

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<sup>108</sup> European Union Directive 2008/1/EC.

<sup>109</sup> See note 95.

<sup>110</sup> For 'totters' see note 86.



in the 1980s and the Derby city civic amenity site, at that time, was actually adjacent to a public highway and I remember being up there one Sunday when the totters came on site with their pickup trucks and we counted eight pickup trucks taking metal off the punters who were driving on the road. Before they could put it over the wall into the waste bunker, the totters would take it. I had a long chat with the boss man. He couldn't read or write but I said, 'where do you sell this stuff?' He said, 'depends on the prices', and he proceeded to quote the prices for different grades of metal in Newcastle, Birmingham, and London. He said, 'We'll send a full truck to where the price is best.' So there are different groups who have been involved in the waste sector, some of them formally, some of them informally, and some of them in partnership with the local authorities and private sector.

**Petts:** I'd just like to come back to David's point about incineration and Europe, and Europe as a driver. At the time of the 1996 Incineration Directive – when we first saw the proposed 0.1 nanogram per m<sup>3</sup> for dioxin emissions.<sup>111</sup> I was a specialist adviser to the House of Lords' European committee looking at the Directive.<sup>112</sup> We travelled to Brussels to try and find out where this new, tough guideline number came from. It's still a very pertinent argument now, around Europe's apparent focus on hazard and the UK's focus on risk. We struggled to find the answer to the proposed guideline value until one of the technical support team explained, 'Well, 0.1 is the limit of detection so it seems sensible to use that with detection methods at the time. And some of the European plants, either Dutch or Belgian, are close to achieving it already, so it seems a sensible standard to take.'<sup>113</sup> This was not a very palatable argument to the UK waste industry. It was even less palatable when they looked at the other sources of dioxins, which didn't have the same stringent controls like the steel industry. But the steel industry is a major employer compared to the incineration industry. So there was a perception that the industry was being driven very strongly to improve technical standards but not because of the risk presented. This drive actually had a fundamental impact on the standards and quality of plant that we now operate, and I think that was also witnessed in what we see in Europe in relation to landfill and in the operation of other plants that we also control in the industry.

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<sup>111</sup> See note 84.

<sup>112</sup> Select Committee on European Communities (1999).

<sup>113</sup> For a similar discussion about the problems of setting limits for potentially harmful substances in the environment, see Christie and Tansey (eds) (2004), pages 20–1; 46–8.

**Gronow:** That's absolutely true because if you're a person in Europe who is responsible for getting a directive through when a member state says to you, 'we've got a system that works' and puts it on the table, you think, 'oh, this is only going to take us a few months, instead of a year and a half, or the twelve years the Landfill Directive took us'. The Germans, particularly, are very good at this because their regulations contain a large number of standards and when you say, 'Why?' they don't know. This happened with the Waste Acceptance Criteria.<sup>114</sup> They have leaching-based standards for waste going into landfill and so we said, 'Well, what's it based on, what are the criteria?', and they didn't know. So we banged away at the [European] Commission and we said, 'We want to do this from first principles so we know why we're doing it.' That's often what happens – if a member state has something and puts it on the table, it looks very attractive to administrators.

**Ruddock:** One of the things we haven't touched on at all, well, in passing but not seriously, is commercial/industrial/construction waste. We have very much concentrated on the household sector, and I just thought at this juncture it might be worth seeing if anyone has any comments on that because, of course, it was rather late coming to the recycling agenda. And I have an interest because my fly-tipping Bill was as a consequence, not of the mattresses being dumped on the roadside but of 10,000 tonnes of rubble being dumped when Docklands was being built and being dumped in my constituency, Lewisham.<sup>115</sup> So I wonder if anybody but me had any particular interest in that area of waste?

**Dennis:** I think one of the main drivers there was the Landfill Tax in the mid-1990s.<sup>116</sup> Prior to that, as a waste management company we would go into factories, small factories, large factories, large like GEC, General Electric Company, over in northwest London and we probably had 20 to 30 containers in there. And you would go in, and all you said to them was, 'Look, whatever you're doing put it in

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<sup>114</sup> Professor Jan Gronow wrote: 'These appeared first in the Council of the European Union (2002) Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of Annex II to Directive 1999/31/EC. Official Journal of the European Communities L11, pages 27–49. These then appeared in the following Regulations: SI 1559 (2002) Landfill (England & Wales) Regulations, which were amended by SI 1640 (2005) Landfill (England and Wales)(Amendment) Regulations.' Note on draft transcript, 13 May 2015.

<sup>115</sup> See note 3. The London Borough of Lewisham is on the south side of the Thames, opposite the Isle of Dogs where the London Docklands Development Corporation built Canary Wharf, among other high-rise developments in the 1990s, see <http://www.lddc-history.org.uk/timeline/index.html> (accessed 14 April 2015).

<sup>116</sup> The Landfill Tax Regulations 1996 (SI 1527).

our bin, we'll deal with it.' We knew our drivers, as I said earlier, when they took the vehicle to landfill, and they tipped it up they would then stay at the back of the truck and sift through it. Health and Safety legislation now won't allow that so that's how some of the 'recycling' was done. But all we did was we put in containers, or before containers, we sent in a tipper truck.

Once we decided that we wanted to get some value out of some of this waste, we started going along to our customers and saying, 'Right, let's just have a good look at what you're throwing away here because we think we can help you and recover some value, so don't just put it in one bin, let's put it in two or three bins, and we'll put the wood in this one.' We started to look to see what was coming out because we realised, on a lighter side, suddenly our drivers were driving around in Jaguars, and things, and we couldn't understand how they could afford it with the wages they were getting back in the 1960s and 1970s. There was value in the waste and the waste management industry woke up to that fact probably in the late 1980s, early 1990s. The Landfill Tax then rammed it down our throats and made us realise that we couldn't take it, landfill was going to be costly, and it was what £7 and £2 per tonne when the taxation first started.<sup>117</sup> Personally, I was involved on behalf of the industry, negotiating with Customs and Excise when that came in during the mid-1990s. That's when we became an integrated waste management service to the customers, to the industrial waste/commercial waste. That's also when the construction companies, when they were building the Barbican Centre, or, one I remember particularly is Kilburn Square [both developments in London], when thousands of cubic yards of clay and earth were being dug out, and it all went to landfill in those days. The construction industry suddenly realised with the Landfill Tax, doing those similar jobs in that time that they couldn't afford this additional cost. That's when builders started reusing rubble/waste on site and building mounds and all sorts of things in new construction areas.<sup>118</sup> And that's when we became alive to this resource, because we wanted to get the value out of the material ourselves and not just leave it to the back-pockets of our drivers, which we'd been happy to do for many years.

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<sup>117</sup> Landfill Tax Regulations 1996 (SI 1527).

<sup>118</sup> See, for example, Hendriks and Pietersen (eds) (2000). A celebrated example in landscape architecture of a rubble 'mound' in London is Northala Fields in the Borough of Ealing, opened in 2008; <http://www.londongardenstrust.org/features/northala.htm> (accessed 12 June 2015).

**Sharp:** I haven't been involved very much with construction and demolition waste, but we were on the fringes of this when it came to us, when we didn't want it. But when I did look into this area, I found out that when they have a large building site, building houses, etc., they apparently order many more toilets and rafters and things than they really need. I don't know why. When the project is finished, some of these are not even out of their wrappers and yet they're classed as waste.

**Eminton:** I tend to see the construction waste sector as outside the traditional waste industry. You've got the municipal waste and you've got the commercial/industrial waste, and the construction materials seem to be handled by other contractors almost in a world of their own. I think there probably was a lot of, perhaps illicit, movement of materials going back in time as well as on the construction side. Probably the Landfill Directive has helped tremendously but it's still a very close-knit community that sector. The other thing that's happened is machinery has been developed that can process concrete and use rubble to actually make that into a secondary material, partly financed from, or from the need to offset, the Landfill Tax and there's also been the Aggregates Levy, which has been a factor in getting more recycling used.<sup>119</sup> The other thing that's helped from the construction side now is, you do get some local authorities specifying recycled materials, but it's still a slightly different industry from the traditional waste industry; it needed that Landfill Tax to make sure that things were done properly.

**Wilson:** Just following up on that point: another parallel sector to the waste industry, traditionally, has been the recycling industry, the industrial value chain. We talk about domestic recycling having died out or gone down after the Second World War and then picking up again. Through all of that period the recycling industry, the scrap metal industry, etc., has been alive and well and working primarily with 'home scrap' materials from industry, which have gone directly to them and haven't actually become waste. With the re-emergence of municipal recycling, it has caused quite a lot of tension between the waste industry and the traditional recycling industry, and the scrap metal industry did not like being regulated as part of the waste industry.

We've mentioned very little about hazardous waste, we talked about the Deposit of Poisonous Waste Act.<sup>120</sup> With the rise of hazardous waste in the 1970s and hazardous waste controls and treatment technologies, the UK was

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<sup>119</sup> The Aggregates Levy Regulations 2001 (SI 4027) introduced a tax on sand, gravel, and rock; see <https://www.gov.uk/green-taxes-and-reliefs/aggregates-levy> (accessed 14 April 2015).

<sup>120</sup> See page 20.

very much at the forefront of that, it was one of the leaders.<sup>121</sup> Our technology was as good as anyone's. We then focused very much on co-disposal landfill as the technology developed and we had the research to back it up.<sup>122</sup> While other EU countries developed the infrastructure for hazardous waste treatment, we largely relied on landfill. And, had it been done properly, it might have worked; as it happened it was cheap and cheerful. I was involved from the 1970s in some of the early international work on legislation and guidance. I've sat on the International Solid Waste Association's Working Group on Hazardous Waste since 1984, and through a lot of that time I was an apologist if you like for the UK system.<sup>123</sup> But by the time we came to when the Landfill Directive came in, and we had to abolish co-disposal in 2004, by that stage, thermal treatment was just 7 per cent in the UK, while the rate in France was 60 per cent because they had continually invested in the treatment capacity whereas we hadn't.<sup>124</sup> Thermal treatment – Friends of the Earth might disagree with me – is destroying the organic contaminants in the hazardous waste.

**Coggins:** A number of comments on, first of all, construction and demolition (C&D) waste. I think there have been a number of trends over the last 20 years. The community sector has also got involved with salvaging wood from construction sites; there are a number of retail outlets that basically take C&D materials – that's an initiative that started in the Netherlands a long, long time ago.<sup>125</sup> The other two strands that are relevant in terms of any history of C&D is that a lot more material is being prefabricated offsite, which means that, in some respects, the construction industry has been at the forefront of waste prevention by putting onto sites the prefabricated trusses for roofs, and so on.

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<sup>121</sup> For a comprehensive report on the state of hazardous waste management in the UK by the 1990s and its association with public health, see British Medical Association (1991), pages 140, 143.

<sup>122</sup> Professor David Wilson wrote: 'Co-disposal landfill in UK usage referred to the co-disposal of selected hazardous wastes in municipal solid waste landfill sites under carefully controlled conditions.' Note on draft transcript, 25 May 2015. See Wilson (1987a); Wilson (1987b). See also Knox (1983).

<sup>123</sup> For details of this Group, with links to some of its publications, see [http://www.iswa.org/iswa/iswa-groups/working-groups/working-groups/wg/show\\_details/working-group-on-hazardous-waste/](http://www.iswa.org/iswa/iswa-groups/working-groups/working-groups/wg/show_details/working-group-on-hazardous-waste/) (accessed 14 April 2015).

<sup>124</sup> See Wilson (1999).

<sup>125</sup> See, for example, Hendriks and Pietersen (2000), chapter 12, 'The Netherlands', pages 122–37.

As far as I'm concerned, one of the unfortunate things in England is that Site Waste Management Plans were abolished, which have been kept in Wales but have been abolished in England.<sup>126</sup> As far as commercial/industrial waste is concerned, I think there are a number of overlapping strands. First of all, data has always been much more difficult to collect. There has been no equivalent of WasteDataFlow for municipal/household waste.<sup>127</sup> Lots of people have tried to relate waste from commercial/industrial sources with things like gross value added, with floor space, with number of employees, and it has never worked. Therefore, what you've had historically is that many companies have simply had a skip on site, or a container, and the skip has been emptied once a week, or once a fortnight irrespective of whether it's full or not. Consequently, a change has taken place because of the Landfill Tax that has been mentioned, but now more companies phone up to get skips emptied when they are full rather than fetching it every week.

On household waste, if you take municipal waste on average in the UK, 80 per cent of municipal waste is household. The other 20 per cent is trade waste from shops, small offices, and so on. That, again, is a component in the management and therefore the final strand that I'd point to is that up until 1990 commercial/industrial waste was dealt with by the private sector.<sup>128</sup> In the municipal sector, it was local authorities, the waste disposal authorities. Since 1990 there's been a blurring/merging of that distinction and I think what we're seeing, if you look at the latest data published by Defra in December, is that

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<sup>126</sup> The UK Government published details about the abolition of these regulations in 2012; see Department for Environment, Food and Rural Affairs (2012a), page 19.

<sup>127</sup> 'WasteDataFlow is the internet-based system for municipal waste data reporting by UK local authorities to government. The system went live over ten years ago on 30 April 2004'; quoted from <http://www.wastedataflow.org/> (accessed 14 April 2015).

<sup>128</sup> Dr Chris Coggins wrote: 'Until 1990, household waste collection and waste disposal was handled by Waste Collection Authorities (WCA) and Waste Disposal Authorities (WDA) respectively. Under the Environment Protection Act 1990, WDAs were told to divest the waste disposal function to arms-length Local Authority Waste Disposal Contractors (LAWDCs), or to contract it out to the private sector, with regulation passing to the Environment Agency in England and Wales. Most of these waste disposal functions were taken over by the big waste management companies, especially under the Private Finance Initiative (PFI) with long-term contracts (typically 25 years). WCAs had also subcontracted collection to private companies, and this continued after 1990. With the cessation of new PFI contracts, a number of "merchant" sites have opened, e.g. one of the first being the Lakeside energy-from-waste facility near Heathrow, started by Grundon but joined by Viridor in a 50/50 venture, taking waste from various local authorities and on short-term contracts. Such merchant sites also take commercial and industrial wastes.' Note on draft transcript, 15 May 2015.

there are far more merchant waste management facilities being built, which are not reliant on 25-year municipal waste contracts but are basically taking waste from a variety of suppliers, usually on three/four/five-year contracts.<sup>129</sup> And those merchant facilities are something that has evolved very much in the last two years, particularly with the abandonment of the PFI (Private Finance Initiative) in particular.

**Patterson:** A couple of points about construction waste. Certainly by the time Heathrow Airport's Terminal 5 was being built, one of the prime contractual conditions was that any waste produced on site had to be recycled on site and, as far as I'm aware, in all my time there, while that construction was going on, that happened. So I think with a will, and alright it was a massive project, but with a will I think that can be accommodated. Second: a number of years ago I was down in Portsmouth and I was taken to the top of a hill to look into a quarry where construction, aggregate waste was being recycled. I remember being quite impressed: in one end was coming all this jumble of waste and everything else, and it was going through various trommels, and at the other end these various streams of aggregate and recyclable materials, all ready to go, were coming out. Having had an aerial view of it, I was really impressed about what was ostensibly something that you could probably do nothing with at all but as an end result there was a whole heap, I think eight or nine piles, of aggregate that could be reused. So I think if the will is there, the technology is there, you're certainly reading it in the trade magazines of companies who are advertising these trommels that will sort out anything you want to put through them. It's a mystery as to why it's not more widespread.

**Thornber:** I'd like to just step off this debate for a moment and come back to a theme that seems to have appeared two or three times. The phrase has been used 'such and such was going on and then health and safety stepped in and stopped that'.<sup>130</sup> From these comments, I get a vague feeling that safety legislation is looked on as more of a hindrance to reuse and recycling than a help. To an extent, as we're now covering the 1980s, I would possibly agree with that, but in the 1980s there was a will within the waste industry through its trade association ESA (Environmental Services Association) to develop some bespoke guidance as to how matters may be carried out safely within the

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<sup>129</sup> Further information about this data was provided by Dr Chris Coggins and is available in the archives of this meeting at the Wellcome Library, London, Archives and Manuscripts, reference GC/253.

<sup>130</sup> See comments from Mr Ernie Sharp on page 35 and Mr Barry Dennis on page 57.

industry through a joint venture with the Health and Safety Executive (HSE) in the form of the Waste Industry Safety and Health Forum (WISH),<sup>131</sup> which is made up of various disparate parts of the waste industry who work together to prepare bespoke instructions, because up until 1987 there was nothing for the waste industry.<sup>132</sup> If you needed to know how to do manual handling, you got a video that showed somebody lifting boxes, etc. – of little relevance to what we do. There is absolutely no reason why recycling, reuse, and indeed waste collection can't be carried out safely, provided that any instructions that are given to people are written by people who actually understand the industry and can therefore speak in their voice and, in so doing, create practical helps to safety that will not be looked at as a hindrance, but rather more of a help, which ensures that everybody goes home safe in the evening.<sup>133</sup>

**Ferguson:** Chair, I'd just like to point out, first of all, that the GLC's Department of Public Health Engineering was dissolved in 1985/1986. That led us through for two years before we knew it was happening, and we actually worked very closely with both the House of Commons and the House of Lords on the Local Government Bill and the Local Government (Interim Provisions) Bill in 1985.<sup>134</sup> The final creation of the London Waste Regulation Authority depended upon a debate in the House of Lords, which I will always remember because it was going on late into the night, most unusual, and it was very close.<sup>135</sup>

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<sup>131</sup> For ESA, see <http://www.esauk.org/> (accessed 16 March 2015). For the WISH forum, on which Dr Toni Gladding is a representative for CIWM, see <http://www.hse.gov.uk/waste/about-wish.htm> (accessed 4 September 2014).

<sup>132</sup> Mr Paul Thornber elaborated: '1987 was the year that bespoke H/S guidance for the waste industry was first mooted. It was taken on by its trade association ESA and some years later in the late 1990s was addressed by the joint venture between it and the HSE which became known as the WISH Forum. This was set up to produce such bespoke guidance.' Email to Ms Emma Jones, 5 May 2015.

<sup>133</sup> Of Luton Borough Council's health and safety improvements during this period, Mr Mick Wright added: '... in 1992, the protective clothing switched to the collectors having "Kevlar" anti-stab patches on their trousers, and the, now almost universal, colour of a green uniform, but with fluorescent light reflecting bands on the legs and arms. Having Kevlar inserts on the refuse collectors' trousers was quite novel at the time, and this was featured on a Sky News broadcast.' Note on draft transcript, 8 May 2015.

<sup>134</sup> These Bills became the Local Government Act, 1985 (c. 51) in which the Greater London Council was abolished.

<sup>135</sup> The London Waste Regulation Authority existed from 1986, following the GLC's dissolution, until 1996, when it became absorbed into the functions of the Environment Agency. Mr John Ferguson was its Director throughout. See also note 5, and an interview with him conducted for the History of Modern Biomedicine Research Group, available to download at [www.histmodbiomed.org](http://www.histmodbiomed.org).



**Ruddock:** That wasn't unusual in the 1980s.

**Ferguson:** Maybe nowadays. Anyhow, it was a very close 265/263 vote but we did get the Authority created. That then led on to a much greater interest in this control of all wastes whether they were construction, demolition, household, or whatever. In that period after 1986, you, for example, Dame Joan, you had your Private Members' Bill/Control of Pollution Amendment Act, which was supported by Government. I have David Trippier's words here, about how valuable this was to introduce a register of waste carriers.<sup>136</sup> Now, that was vital because it enabled licensing authorities to actually have professional police come in as members of staff and control this flow, whatever it was, and how it was being handled up to its ultimate point of disposal, whether that was by incineration, or whether it was this dreadful business about clinical waste – an appalling situation that led to a great deal of work, which had to be controlled properly.<sup>137</sup> But this concept of duty of care that you (Dame Joan) also introduced at that time was, it was setting a scene again for the coming decade if not couple of decades.<sup>138</sup> I think that's all relevant to this period, 1980 right up to the year 2000.

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<sup>136</sup> The Rt Hon David Trippier MP spoke briefly on this topic in his keynote address to the 1990 Institute of Wastes Management annual conference on recent developments in the waste industry in the UK: 'Then there is the extension of controls upstream from the waste disposer to the waste producer. The first step in this chain was taken last year when the Control of Pollution (Amendment) Act, a Private Member's measure supported by Mrs Joan Ruddock with Government support, introduced the register of waste carriers. This is not a licensing system or any sort of quality control on waste carriers but a complete list of persons who will be traceable and accountable', page 21. Conference speech provided by Mr John Ferguson, and available in the archives of this meeting at the Wellcome Library, Archives and Manuscripts, reference GC/253.

<sup>137</sup> Mr John Ferguson wrote: 'I was referring to the appalling situation that arose in 1982 with beaches in the Thames estuary being contaminated with clinical wastes which resulted in the Minister of Health, Rt Hon Mr Kenneth Clarke MP setting up the Working Party on the Disposal of Clinical Wastes in the London Area. Its final report was made in April 1983.' Email to Ms Emma Jones, 18 May 2015. See Greater London Council (1983). See also Mr John Ferguson's paper, 'Improving the collection and disposal of clinical waste – the need for national awareness', which provides a comprehensive account of the development of clinical waste management control measures in London during the 1980s, in which he was a key participant. The paper was delivered at the 90th Annual Wastes Management Conference and Exhibition in Torbay in June 1988; it will be deposited with the archives of this meeting at the Wellcome Library, London, Archives and Manuscripts, GC/253.

<sup>138</sup> Mr John Ferguson wrote: 'I had in mind the provisions that ultimately were contained in the Environmental Protection Act 1990, in particular Section 34 and the Duty of Care, and the Environment Act 1995, and the establishment of the Environment Agency.' Email to Ms Emma Jones, 18 May 2015.

**Dennis:** When the Landfill Tax came in, I received a call from Government to say that, 'Next week there will be a Landfill Tax announced and we need to talk to you about it.' Now, prior to that, there was the 'Pearce report' on the Landfill Levy, which we as an industry blew out of the water and the DoE put it away and it just disappeared.<sup>139</sup> It cost a lot of money, I remember, and nothing happened at all. Then the Chancellor, I understand, was short of dosh in his budget and they blew the dust, and Jan (Gronow) may be able to help me here, off the Landfill Levy and he said, 'Well this will do, we're going to have a Landfill Tax.'<sup>140</sup> Nobody knew what the money was going to be regarding the levies and they didn't even know how they were going to implement it. We were then called as an industry body to sit with Her Majesty's Customs & Excise and decide how Landfill Tax was going to be implemented. When we walked into that room, and one of the guys is still at the Treasury, Andy Discom, he was involved with the Customs & Excise as it was and they decided that Landfill Tax would be levied by the size of the vehicle. So a 4-wheel truck would be 'x' pounds, a 6-wheel truck would be 'y' pounds, and this was axles, and so on, until we pointed out that you could have a 40-yard container or 30-yard container on a 4-wheel lorry and you could have a 6-yard container on an artic. They quickly realised that that wasn't going to work. We then had a number of discussions to decide eventually that it was going to be done on tonnage rather than on cubic capacity and that was because compactors were heavily involved in the industry then. They chose to set the levy at £2 for inert waste, or inactive waste, and £7 for active waste, and basic waste, and that was fine, and that was the main driver; it didn't come in for environmental reasons. That was the cover it came in, it was purely a financial instrument in the early days.

The Levy soon became an environmental tax and, quite rightly, it has been a tremendous driver that we all support in moving away from landfill. But it's created a major problem because the difference in Landfill Tax now, well from 1 April 2014, it's going to be £80 (per tonne), and it's now £2.50 per tonne

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<sup>139</sup> CSERGE, EFTEC and Warren Spring Laboratory (1993).

<sup>140</sup> Chancellor of the Exchequer, Rt Hon Kenneth Clarke MP for the Conservative Government announced the Landfill Tax in the 1994 budget; see Seely A. (2009) Landfill tax: introduction and early history. House of Commons Library, Parliamentary Archives, reference SN/BT/237.

for the lower rate inert waste.<sup>141</sup> That gap is so enormous, which has led to major issues in waste crime. The Government and UK plc is losing. There is a report being issued next Tuesday in the House of Commons that Eunomia has done for the Environmental Trust, and we reckon there's over £800 million being lost in unpaid taxes.<sup>142</sup> Although the Landfill Tax has been a great driver in environmental terms, and we would all salute it, it has created another major issue that Government, the Treasury, the Environment Agency, and the industry, are going to have to address because it's caused a major problem in environmental crime, which includes fly-tipping, illegal and wrongly classified waste, weighbridges just being passed with vehicles not going over.

**Coggins:** Before we finish on the Landfill Tax, the other element I think that illustrates some of the confusion, some of the problems when they introduced it was the fact that there was a Landfill Tax credit scheme associated with it. Landfill Tax is one of the few taxes that is hypothecated in Treasury parlance. Using the Landfill Tax credit scheme has never been fully documented but lots of community sectors got money to do things, lots of local authorities got money to do things, and then the Government realised it was just a bit of a show and stopped it. So we now have a Landfill Community Fund where landfill can still be used for community purposes but not directly related to waste.<sup>143</sup>

**Patterson:** Just picking up a couple of points from John (Ferguson), he mentioned clinical waste and it was quite interesting because clinical waste back in the early 1980s hit the headlines big time with problems of human waste and human limbs, and things, turning up on the beaches of Essex and whatever.<sup>144</sup>

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<sup>141</sup> Two rates of Landfill Tax are charged: 'standard' and 'lower'. The reduced tariff applies only to the inert materials that are detailed in the Landfill Tax (Qualifying Material) Order 2011 (SI 1017). Since its introduction in 1996, the standard rate has risen from £7 per tonne to £21 per tonne in 2006, then to £72 per tonne in 2013. In contrast, the lower rate has risen from £2 per tonne in 1996 to £2.50 per tonne in 2013; details derived from the HMRC's 'Excise Notice LFT1: a general guide to Landfill Tax', published online at <https://www.gov.uk/government/publications/excise-notice-lft1-a-general-guide-to-landfill-tax/excise-notice-lft1-a-general-guide-to-landfill-tax> (accessed 15 April 2015).

<sup>142</sup> Environmental Services Association Education Trust (2014).

<sup>143</sup> Details of the Landfill Communities Fund (LCF) are published on the website of Entrust, the organization that regulates the Fund, <http://www.entrust.org.uk/landfill-community-fund/> (accessed 15 April 2015).

<sup>144</sup> Two incidents reported in *The Guardian* newspaper involved a water skier off the coast of Canvey Island in the Thames Estuary who hit a sack and was sprayed with blood, and also the discovery of dumped clinical waste in London's Grosvenor Dock, marked 'warning: hepatitis'; see Chorlton (1982).

One of the television reports, in fact, was the result of a paper that I presented to the Institute of Wastes Management in 1981 on hospital waste, as it was called then. I was in the class of 1981 in Hackney College as part of the diploma course for the Institute of Wastes Management, and my final year project, which was also the subject of an environment committee report for Westminster [City Council] was on hospital waste.

Westminster had 42 major hospitals and clinics within its boundaries at the time and there were no clear guidelines and no definition of who did what with clinical wastes: they just all went in the bin. We had a number of instances where refuse collectors were covered with blood because blood bags would go in the bins and when the compression plate came down it sprayed them. We had needle stick injuries and everything else. In today's health and safety climate, you would throw your hands up in horror but in those days it was just wash yourself off and get on with it.<sup>145</sup> Nobody ever complained, it was just part and parcel of the job. But I subsequently found that, of the hospitals and clinics, there was no clear definition, there was no comprehensive or cohesive policy about segregation of the waste in the hospitals. One hospital produced blue sacks for kitchen waste, another one would use it for theatre waste. One hospital had seven different colour codes for segregation of waste, which was very laudable but none of the staff who were dealing with it could speak English. Of course, the signs were only in English. So all these sorts of things came up.

I presented my report, and I was given permission to present my third-year project to the college on condition that it remained confidential until the committee report. Ernie (Sharp) was our lecturer at the time. He took it, and he had it in his office ready for marking, but while he was on holiday, somebody found it: 'Hello, what's this?' And then it was on London Weekend Television news, my pictures and my project were all over the news. Needless to say the Council (Westminster) wasn't too happy. That aside, hospitals' clinical waste was the subject of a presentation to an open meeting at the Institute of Wastes Management. My recommendation was that there should be just two types of sacks: yellow sacks for anything that's medical or clinical and a black sack for domestic style waste, end of story; that way it's nice and easy, everyone can

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<sup>145</sup> See, for example, guidelines on best practice in handling needles, Health and Safety Executive (2007); Health and Safety Executive (2014a), see page 11. For a discussion of medical sharps and new clinical waste regulations that were introduced in the UK in 2006, see Angel (2009).

follow that.<sup>146</sup> In fact, that recommendation was from Laurence Peterken, who chaired the GLC committee on hospital waste, which was a result of that paper. As a result of that we have the clinical waste industry as we know it today and I was never paid a penny for it. [Laughter] So it was interesting for two things: first off, the GLC took a very strong view at the time that they shouldn't be dealing with this waste. My view was, 'I'm sorry, under the current legislation, if we're requested to collect hospital waste, we have a duty to collect it and if we have a duty to collect it, you have a duty to dispose of these materials whether you like it or not.' So that was number one. But the second thing was the difference in people's outlook on health and safety. You know, in such a relatively short period of time, that sort of situation, it just wouldn't happen now, there would be lawsuits all over the place, yet in those days it was just part and parcel of a day's work.

**Ruddock:** That's fascinating. I think that's an area of waste disposal that most of us never knew anything about. But I know that Tilli, particularly, will be absolutely fascinated by that because she was involved in clinical research.

**Tansey:** Yes, I remember those many differently coloured bags very well.

**Ferguson:** Laurence Peterken was our controller of operational services in the authority that I was responsible to. He was absolutely determined to solve this problem. It was appalling. And we also found that we had support, from memory I think it was Ken Clarke, the Minister for Health at that time, and he said to the GLC, 'Get on with it! You solve it!'<sup>147</sup> So, having a good controller, who understood this, he said, 'Right, off we go!' 'John, get on. You've got to get this solved now!' We got into so many different areas of interest, for example, infection control nurses, they were absolutely essential and they backed the concept that this particular sort of waste was very dangerous, objectionable, and so on.<sup>148</sup> It was a good example then of how this issue spread nationwide from London. It spread overseas, and this concept of having a yellow bag for

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<sup>146</sup> Tudor, Noonan and Jenkin (2004) discuss the incineration of yellow sacks on hospital estates and at municipal incinerators, see page 607. See also Sim (1999). The Environmental Protection Act (1990) regulated the disposal of 'genetically modified organisms' but other clinical waste was not specified; see Part VI.

<sup>147</sup> The Rt Hon Kenneth Clarke QC MP was Minister of State, Department of Health from 1982 to 1985.

<sup>148</sup> For infection control specialist nurses, see, for example, Reynolds and Tansey (eds) (2008), pages 31–2, 42.

clinical waste spread worldwide.<sup>149</sup> It's all over the place, in television serials about casualties and so on you'll see little yellow containers and yellow bags. It's just a good example of how one subject can be lit by the activities, say, of Nick doing this thing and then leading on to political support for professional work.

**Ruddock:** There might be a story as to why it was a yellow bag but we won't go into that.

**Sharp:** I was in charge of the rivers at that time and, from Westminster and the City of London, the refuse was collected early in the morning or during the night, so the barges were full up. In the afternoon the containers would come in with the hospital waste on and it would be on top of a full barge. Then they covered it with a canvas sheet. When the barges got down to Raleigh in Essex, or Mucking, as they pulled the sheet off they pulled the hospital waste off into the river and it landed on the beach at Castle Point. So I was in trouble for putting clinical waste on the beach and that's where that started with Nick.

**Gronow:** Then, of course, what happened was that the hospitals put fairly insignificant people in charge of this waste management because it wasn't thought to be a very important issue, and much too much ordinary waste was going into clinical waste bags and costing the hospitals an absolute fortune to destroy when there was no need for it.<sup>150</sup> I still get the impression when I go into a hospital, if I see they segregate their waste properly I think, 'This is going to be a good hospital.' You know, never mind the waste management, they're organized properly. Then, when was Crown Immunity removed from National Health Service incinerators?<sup>151</sup> Because that was the next thing. We had the most horrendous plumes coming out of the incinerators that we could do absolutely zilch about. When did that happen? 1990s, was it? It wasn't until quite late it seemed.

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<sup>149</sup> In 1986, for example, in Sweden, at the 5th ELMA Conference and Trade Fair on Recovery of Material and Energy, Waste Handling and Cleansing, 'John Ferguson gave an excellent discussion and film of the hospital waste system in London. The main emphasis is to simplify and standardize procedures so that they can be followed by the many foreign-born workers in the city. All hospital wastes from patients goes into yellow bags and is incinerated. Sharps, broken glass, needles and thermometers, go into special cans which are also incinerated'; quoted from Dean (1986). Mr John Ferguson also contributed to the 1992 European Conference on Hospital Waste Management where he cited the use of yellow flags in a maritime context for indicating contagion as a precedent; see Dean (1992).

<sup>150</sup> See Audit Commission (1997). At the time of the Audit Commission's report on hospital waste, rates of waste disposal for clinical waste ranged from £180 to £320 per tonne; see pages 4 and 13–14.

<sup>151</sup> National Health Service and Community Care Act 1990 (c. 19), with effect from April 1991; see section 60.

**Ferguson:** Just going on from a point Ernie made, he said about how this stuff was on the open barges. That was how clinical waste was dealt with then, right up until the early 1980s waste was poured into open barges and then grabbed out once it got to landfill down the Thames.

The Castle Point event shows you how one incident leads to another, then leads to another. That gave us the tremendous urge to containerize all our wastes on the river, which then led to the chain of three riverside transfer stations, which still exist today. If you go to Battersea power station, the river transfer station there, today you'll see going down the Thames, the full yellow containers. Those were major capital schemes that have lasted, what 20, 30 years of containerization. This system fitted in well because we'd already containerized rail haulage. We'd tried to containerize as much as possible road haulage and this was the final part of this plan to try and keep waste so that no one really looks on the Thames as polluted now, as you've got millions of visitors. People just see yellow containers going down and coming back empty. They don't know what it is. But it was that event at Castle Point and many others that led to, we're talking about millions, hundreds of millions of pounds of investment, which was something that the old GLC could do.

**Sharp:** I would like to say, it wasn't all my fault.

**Ruddock:** It wasn't all your fault. It obviously had a good outcome whether it was your fault or not. We haven't mentioned much about the Environment Agency yet.

**Petts:** Oh, I'd be happy to say something about the Environment Agency. But first I was going to say that Crown Immunity was removed in 1990 for the hospitals, for all matters. I think the other interesting thing in relation to clinical waste management that we saw happening was the merchant sector being able to step in alongside the hospitals for what we might call the higher end of the clinical waste market, recognizing that it was important to handle waste properly.<sup>152</sup> We saw high cost, dedicated clinical waste plants being developed, and there's a similar analogy in what happened in the hazardous waste sector. Here there were large numbers of hazardous waste incinerators in-house, in the chemical, petrochemical, oil industry, etc., but they were not often counted. They sort of existed elsewhere. If you saw counts of hazardous waste incinerators, it was something like 5 merchant plants at one stage but there were something like

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<sup>152</sup> Professor Judith Petts wrote: 'For example, the first dedicated clinical waste incinerator was opened by Grondon waste management in 1990.' Note on draft transcript, 6 May 2015.

50 in-house incinerators.<sup>153</sup> Over time, with the dramatic effects of regulation and, definitely, the EU incineration directives,<sup>154</sup> both the clinical and hazardous waste in-house sectors realised that they could not afford to upgrade their own plant and manage them to the new regulatory standards, and so hospitals started to move waste out into the merchant sector. So, returning to the Environment Agency, I had a contract to train staff there when the new Environment Agency was formed in 1996, and it brought together, of course, ‘all those rivers people’, Her Majesty’s Inspectorate of Pollution, and the local authority waste people, into the single agency. I had a contract at Loughborough University to train the new waste management teams. We put through several hundred people at the time. I remember the culture shock of the Agency being formed, in that it brought together very diverse regulators and regulatory systems into an agency that then had to put into place a single set of standards for England and Wales. Bringing together this cadre of very different cultural backgrounds to waste management control, I think, is a very interesting part of the history and, still today, you will hear people say: ‘Well, of course, he was in the National Rivers Authority (NRA)’, or ‘he came from a local authority’.

This new Agency had been recommended in 1976 in a report of the Royal Commission on Environmental Pollution, on air pollution.<sup>155</sup> The report pointed to the need for a single regulatory authority to cover all aspects of the environment. It basically took 20 years for that body to come into being. And I think that that sense of the time it takes and the progress of change actually relates to a lot of things that have been said here today. The pressures for change, including European, the public pressures for change, the growth of the industry itself all came together at that point in time. But we have to remember the 20-year history in bringing about a single regulatory body.<sup>156</sup>

**Gronow:** Unfortunately we moved into the NRA with an NRA structure, and one of the things that you always heard about the NRA was that it was hollow at the centre. The regions of the NRA had a lot of power, so the regions in the Environment Agency had a lot of power, and I believe they are trying to

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<sup>153</sup> Professor Judith Petts wrote: ‘[In-house incinerators] were on chemical industry sites, etc., e.g. ICI, Runcorn, even smaller pharmaceutical companies such as 3M in Loughborough. These were not dedicated for clinical waste but largely for other hazardous waste.’ Note on draft transcript, 6 May 2015.

<sup>154</sup> See note 84.

<sup>155</sup> Royal Commission on Environmental Pollution (1976).

<sup>156</sup> For the politics surrounding the creation of the NRA, see Kinnersley (1988).



get rid of them now. I actually watched the destruction of the last attempt at a meeting in Bristol. I actually watched it happen in front of my eyes. It was a horrid organization to go into. There was no one who had any expertise in human resources (HR), so we were treated extremely badly, and still, I believe, one of the worst problems in the Agency is a lack of trust in anyone, and that's why people don't make decisions because their boss doesn't support them and if you make the wrong decision it falls on your head. It was horrid. After being a civil servant who was so well looked after HR-wise, I mean the state of the civil service then was, when you had a problem you went to HR with it, you didn't go to the union. To go to an organization who treated so many people so badly was really, really difficult to cope with, and I still don't think the Agency's got over it. There are so many instances of people who were treated so wrongly from a personnel point of view.

**Sharp:** I was going to leave this question until the end but I think it's appropriate now. We appear to have levelled out at about 40 per cent recycling. The EU says we must reach 50 per cent. I don't know if somebody can tell me whether the deadline is 2015 but we've got to reach 50 per cent, or we're likely to be fined something like £1 million a day.<sup>157</sup>

**Gronow:** Well, there's a huge debate going on in the industry about whether we've got enough infrastructure to meet that target, and the Landfill Directive target to divert 75 per cent of biodegradable municipal waste away from landfill by the same time. Nobody's come to a decision. I mean, lots of people have come to a decision but they're all different so it's still up in the air, but there is quite a lot of work going on.<sup>158</sup>

**Wright:** Yes, we were treated by Defra to a tour of various European countries under that programme that was running then, but we won't see that again; we visited Germany, Sweden, Holland, Denmark, and France. In Germany, the first city we visited was Hamburg. The recycling rate there is 65 per cent and they collect the waste every four weeks. When we got out into the countryside

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<sup>157</sup> See note 163.

<sup>158</sup> See, for example, an 'Open Letter for Publication' (August 2013) from the Association of Directors of Environment, Economy, Planning and Transport calling for the Government to reconsider its withdrawal of funding for waste infrastructure, including Mr Barry Dennis as a signatory in his capacity as Director General of the Environmental Services Association; [http://www.esauk.org/reports\\_press\\_releases/press\\_releases/ADEPT\\_Joint\\_Call\\_To\\_Action\\_Letter\\_ICE\\_ESA\\_CIWM\\_TAG.pdf](http://www.esauk.org/reports_press_releases/press_releases/ADEPT_Joint_Call_To_Action_Letter_ICE_ESA_CIWM_TAG.pdf), and Department for Environment, Food and Rural Affairs (2013a); <https://www.gov.uk/government/publications/forecasting-2020-waste-arising-and-treatment-capacity> (websites accessed 15 May 2015).

areas, the recycling rate there, they swore, was 80 per cent. We said, ‘How do you do that?’ Residual waste is collected every eight weeks. You know, people here have apoplexy about collecting it fortnightly [laughter].<sup>159</sup> And, of course, you went to the places in Hamburg and they had six recycling containers and people used to do it and use it properly and if they didn’t they were fined. Well, we just thought, ‘It’s not going to happen in this country.’ The place where we found the most recycling containers was Emmeloord, in the Netherlands, where they make the Geesinknorba refuse vehicles. They have 14 containers and they use them all. It’s all separated, they’re collected by separate vehicles. So if you want those sorts of recycling targets, which are possible although it’s plateauing as we speak, because I’ve just looked at the latest figures on WasteDataFlow across the country, it is plateauing really badly especially in urban areas.<sup>160</sup> So that’s starting to cause some concerns.

**Ruddock:** I believe Toni may have done some work on this.

**Gladding:** I’ve done a lot about alternate weekly collection. Since we’re on that subject I’ll just dwell on it for a moment. There is already an authority in Scotland that does a three-weekly collection of residual waste. There will be authorities in Scotland and Wales that will also be doing that, and monthly collection is pretty common in Germany actually. They do claim with this monthly collection system that they are achieving 60 per cent plus recycling. It is coming, it is going to happen. So in Germany, in particular, it’s plastics and paper one week and organic material, I think, comes out every fortnight, and then you’re left with this residual fraction, which can be up to 40 to 50 per cent semi-organic, and there are issues obviously around odours and flies and things like that, which I think will probably get debated in the press as it all comes out.

**Ferguson:** Just to go back to the creation of the Environment Agency, I think it’s very important to bear in mind that the London Waste Regulation Authority (LWRA) just so happened to be, in a sense, a test bed for separating licensing away from the operation of disposal, and that side of waste management and that test bed was ten years of life. The LWRA was, as I’ve said a number of times now, closely in touch with the political scene because it was an authority with Conservative, Labour, and Liberal Democrats’ membership, and they tried to work together as far as possible. During that time we tried to carry out the duties

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<sup>159</sup> See Dr Toni Gladding’s comments about the relationship between the frequency of waste collection and the life cycle of the fly on pages 49–50.

<sup>160</sup> See note 127.

of licensing sites, the duty of care with regards to carriers, and so on but by the fifth year in the life of a test bed it was already being debated that we should have an authority such as an agency that would encompass flood, river, and waste on a national basis, meaning Wales and England but excluding Scotland. This was keenly debated in both the House of Commons and the House of Lords. Sir Hugh Rossi, for example, was most interested in this concept, Lord Nathan in the House of Lords likewise.<sup>161</sup>

We were constantly being questioned, and I've got minutes here of the Environment Committee of the House of Commons in December 1988 in which the members and officers were closely questioned: 'How do you think it might work?', and so on.<sup>162</sup> So getting close to the formation – that was in 1992 to 1994 – at that time we were trying to form the best basis for this new organization. Jan, I know it has some problems, you've made them very clear this afternoon, but nevertheless the thoughts were positive and that then led to the closest cooperation in setting up how people could be, human beings, men and women, transferred from activities in these different organizations like the NRA and HMIP (Her Majesty's Inspectorate of Pollution), local authorities going into this new body. So that was the background, and I hope that somehow in this evolution some of the problems Jan has mentioned may be solvable.

**Coggins:** I think with regard to recycling, the factual issue is the European target of 50 per cent by 2020.<sup>163</sup> There's also the target by 2015 to separately collect at least paper, card, and so on. That's a debate that's going on at the moment as to whether co-mingling is acceptable.<sup>164</sup> If you look at the data, co-

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<sup>161</sup> Sir Hugh Rossi (b. 1927) was Chairman of the Government's Select Committee on the Environment from 1983 to 1992. Lord Nathan (1922–2007) was a Member of the Royal Commission on Environmental Pollution (1979–1989), and Chairman of the House of Lords' subcommittee on the environment (1983–1987).

<sup>162</sup> See 1988/89 HC 22-I-III Environment Select Committee: Toxic Waste. Environment Select Committee. Three volumes with proceedings, memoranda, and appendices; second report, pages 328–9, in which Mr John Ferguson was questioned with other GLC officers. He was also interviewed as Director of the London Waste Regulation Authority on 11 December 1991; see First Report from the Environment Committee, Session 1991–92 (HC55) *The Government's Proposals for an Environment Agency*, sections 204–23.

<sup>163</sup> This target was stipulated in the European Union Directive 2008/98/EC on waste (Waste Framework Directive).

<sup>164</sup> Co-mingling is the collection of recyclables as mixed materials, as opposed to those that have been separated at source by households. The 2008 Waste Framework Directive stipulated that recyclables should be collected separately to maximize recycling potential. For a review of co-mingled recycling collection, see WYG (2012).

mingling of recyclables didn't exist in 1996, it was brought in as a cost-saving measure and – although you've got Newcastle-under-Lyme, which I think has got the most recycling containers in the UK, they have nine containers for each household – I think co-mingling has become a very important element. Of course, we're currently going through this debate as to whether co-mingling can be justified under TEEP (technically, economically, and environmentally practicable).<sup>165</sup> Europe appears to have agreed that co-mingling is acceptable. England has got a recycling rate of 44 per cent; Wales has got 52 per cent already. Wales and Scotland have set targets of 70 per cent. England has not set its separate target, only the 50 per cent. But there are other things that are important to keep in mind.

One of them, as I mentioned earlier, is that a big chunk of the recycling rate in England is the organic fraction: food and particularly garden waste. There's one view that, if WRAP (Waste and Resources Action Programme) continues to be successful in preventing food waste – the amount of food waste has already gone down between two to three million tonnes in the last few years – if food waste goes down further and it's not available for anaerobic digestion, we have a load of infrastructure that would be uneconomic. Picking up John's comment about the overall infrastructure debate, and the diversion then, Eunomia brought out two reports last year: one says there's going to be too much capacity, the other said not enough.<sup>166</sup> Defra brought out data in December with a list that says it is 95 per cent confident it's going to meet the diversion target by 2020.<sup>167</sup> Again, lies, damn lies, and waste statistics. [Laughter]

**Petts:** Just to add to Chris' comment, we haven't as yet mentioned that Britain actually exports waste. We haven't mentioned trans-boundary movement of waste, which, of course, was a real environmental 'hot potato' in the 1980s and later in the 1990s with European legislation following.<sup>168</sup> But there is also the issue of, when we talk about recycling, what do we actually mean? To what

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<sup>165</sup> A Veolia leaflet on 'Mixed material (co-mingled) collections' summarized the outcome of the debate: 'Following EU guidance, the dilemma has now been resolved: they may still be collected together as long as it does not adversely affect the quality of the materials that are to be recycled'; this document was previously published at [http://www.veolia.co.uk/sites/g/files/dvc636/f/assets/documents/2014/09/2\\_Mixed\\_material\\_collections.pdf](http://www.veolia.co.uk/sites/g/files/dvc636/f/assets/documents/2014/09/2_Mixed_material_collections.pdf) (accessed 23 April 2015); however, it was no longer available on Veolia's website at the time of publication.

<sup>166</sup> Eunomia (2013a and b).

<sup>167</sup> Department for Environment, Food and Rural Affairs (2013a).

<sup>168</sup> See, for example, Schenkel and Skinner (1985).

extent are people aware of the fact that materials do go out of the country to be recycled or reused? When we look at the charity sector, we are happy to take our old glasses along to Specsavers or Boots, etc., who can recycle them to the developing world for us, in essence as a form of aid. Other materials, such as batteries, have had to go to Europe for recycling when Britain did not have battery resource recovery options.<sup>169</sup> Recycled computer parts go to India driven by demand for IT resources. So there's an opening up of world trade in materials, which tends not to be talked about a lot but certainly is something that will generate public interest and also concern. Earlier today we discussed about people wanting to be able to manage waste close to home and to where it is generated. Following Chris' point about recycling figures, which relate to the component of the waste stream that can be recycled rather than a proportion of the total waste stream, it is still evident that we can recycle more than 50 per cent but where does it go to, and is it acceptable?

**Ruddock:** I think that is really, really important and, as Judith says, hasn't been touched upon sufficiently.

**Dennis:** A couple of points here following on from what Judith said, but firstly from what Chris was talking about: co-mingling. We just had a judicial review that has cost a lot of money right across the board, certainly to the industry and particularly to Defra as well. The judgement was very clear on co-mingling and I think we have to understand, probably the industry would say and others probably know a little bit more about it than I in the detail, but I think everybody would agree that glass should probably be collected separately.<sup>170</sup> But for the other components, we've got technology now with the MRFs we have in this country and the technologies that can deal with co-mingled paper, cardboard, etc. etc., I'm quite confident about that; so co-mingling can exist.

On recycling targets, and this was something that came up at a presentation last week about incentive schemes with Serco and the Eunomia report, the key is to make it simple, make it easy for Joe Public and industry as well to recycle and we will do it. Make it complicated and it won't work at all. The other point that

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<sup>169</sup> Professor Judith Petts wrote: 'Even in 2013, the UK did not have a battery recycling plant. Collection of batteries has taken place but all batteries once collected have had to be exported for recovery.' Note on draft transcript, 6 May 2015. See, for example, Messenger (2013).

<sup>170</sup> The judicial review found that co-mingled waste was acceptable under the Waste Framework Directive; see, for example, the Environmental Services Association's article on the outcome of the case in February 2013: [http://www.esauk.org/judicial\\_review\\_outcome/](http://www.esauk.org/judicial_review_outcome/) (accessed 23 April 2015).

you just mentioned about export, we have to realise now that the world is a very small place and it is a very big marketplace for the whole waste industry. Now, if the industry can work and export materials, where we can run a business and make it profitable for reinvestment, create employment, and that means selling recyclables to different parts of the world rather than keeping it in this country, well, so be it because that's what we have to do. I think we must understand that and get to grips with it and not feel that we're dumping stuff into China or Asia or any other part of the world. They are markets.

Of course, once you get into any society, you will always have people who will try and short-circuit the system, and take liberties and export basic waste, as happened in Bristol.<sup>171</sup> You will never stop people trying to take the shortcuts to earn a few bob. We mustn't get distracted by those people who are basically criminals doing the wrong thing, exporting rubbish to wherever and then moaning and groaning that we shouldn't be exporting waste. The vast majority of our industry is carrying out a very good job, creating jobs and adding to our economy and our GDP, and we mustn't lose sight of that.

**Ruddock:** A bit of controversy introduced there.

**Sharp:** People don't seem to be moving quickly enough. If we want to build a large depot or waste management facility, from the beginning to starting operation is about seven years. Am I right? So we've got to plan seven years ahead. Are we doing that? I was in a meeting in 1988, publicity has been mentioned a few times today – let it be good publicity or are we not in danger of being drowned under a sea of useless paper? After 14 years of the Control of Pollution Act we still have emblazoned across our television screens the worst possible aspects of waste-disposal-to-landfill in contravention of all the laid down standards and in violation of the Health and Safety at Work Act.<sup>172</sup> So it has taken them 14 years to move on the Control of Pollution Act, that's why I say someone ought to get their finger out. The other point I want to make: what Chris said about coal, I'm not political but somebody buried 300 years of coal that we can't get at.<sup>173</sup> We still have 300 years of coal down there.

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<sup>171</sup> In March 2013, people associated with the Edwards Waste Paper company's illegal export of waste rather than recyclables to Brazil in 2008/2009 were fined and sentenced; see Anon (2013).

<sup>172</sup> The Control of Pollution Act 1974 (c. 40) legislated for the control of waste disposal, water pollution, noise, atmospheric pollution, and public health. Health and Safety at Work etc. Act 1974 (c. 37).

<sup>173</sup> A reference to the industrial disputes between coalminers and the Conservative Government during the 1980s, which led to pit closures and the eventual demise of Britain's coal industry.

**Ruddock:** Now that would be a controversial topic [laughter], so I think we will leave that one aside.

**Gronow:** I'm trying to remember what it was I wanted to say. First of all I'll pick up on the recycling, and export of recycling, because if we're talking about a circular economy we are actually exporting resources and we do have to be careful about that because after all WRAP was formed to develop home markets for recycling.<sup>174</sup> They've got into everything else but we still don't have a very good home market for recycling and I do think we have to be careful about exporting resources that we might need or that become difficult to obtain. When it comes to separate collection, I think that in the [EU] Council of Ministers, when the Waste Framework Directive was negotiated, we immediately put down a minute about how we interpreted separate collection and the European Commission accepted it.<sup>175</sup> So that has to be part of the argument as well.

**Petts:** Just to follow up, I agree on resources and recycling. I'm certainly not against export of materials *per se* but I do think we have to work out the balance of what we're trying to achieve and re-using a resource at home should be the first question, alongside how much carbon we are generating in transporting material around the world.<sup>176</sup> I can remember, years ago, in Cornwall's waste management strategy development, a debate about whether it was better to burn waste and produce energy in Cornwall rather than move it by road all the way to Aylesford in Kent to the paper mill. It is important to think through the logic of the waste management chain and issues relating to the proximity principle. We increasingly see the public questioning the reuse of resources, or the use of waste in place of other resources, such as to generate energy and heat.

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<sup>174</sup> The Waste and Resources Action Programme (WRAP) was founded in 2001. Mr Meacher, then Minister for the Environment, explained its functions at a House of Commons debate on recycling in 2002: '... last year we established the Waste and Resources Action Programme with £40 million of government and devolved administration funding. Its focus is on creating stable and efficient markets for recycled materials ...' HC Deb 30 April 2002, vol. 384 cc923–30. See also <http://www.wrap.org.uk/content/what-we-do-1> for the organization's current work (accessed 23 March 2015). For the philosophy of the circular economy, see note 78.

<sup>175</sup> European Union Directive 2008/98/EC on waste (Waste Framework Directive). See, for example, Environment Agency (2014).

<sup>176</sup> See, for example, a study of the carbon footprint of the UK's paper and plastic bottle exports to China, Waste and Resources Action Programme (2008).

**Patterson:** I don't know what planet some of these people live on when they talk about five or six bins, or five or six containers and things, you know, have they not been to the back streets in Manchester, have they not been to the multi-occupancy houses in, say, inner London with basement areas? They're absolutely not practical, there is no one single system that will work for this country at all, and that's from a practical point of view as well as a common sense point of view. So I don't see where some people get off saying, 'That's what we've got to do.' It doesn't work. I agree that you've got to make it simple for it to work.<sup>177</sup> It's the KISS principle: Keep It Simple Stupid. At least on that basis you've got a fighting chance of making it work because any kind of separation at source relies on the public. If the public is not going to participate because it's too much of a pain, you're on a loser for a start.<sup>178</sup>

I certainly agree with the comments here about the carbon, balancing off the carbon situation. Multiple collections using multiple vehicles adds to your carbon costs, so everything you want to try and save in recycling your paper and your cardboard and your glass goes up in smoke because you just doubled the number of vehicles on the road, as well as all the infrastructure of the plant machine that's got to deal with it and then recycle it. At the end of the day you talked about exporting waste but have we actually got a market in this country for everything we produce? No we haven't. So what are you going to do with it? Stockpile it, hope someone doesn't set it on fire like we had at St Albans with all the wood waste?<sup>179</sup> Or do we actually try and make a business of it as Barry has said, export it and at least we've got some GDP coming in, we're employing people, and we have a home for the waste rather than it doing nothing. So the last point is really on the recycling issues themselves in the co-mingled situation. I can understand the co-mingled situation, I think it makes absolute sense and I always have a little thing that I throw in at the end to all the recycling people I ever talk to: there's one great answer to all the recycling debates, stick it all in one bin and burn it.

**Wilson:** On the export question, I think it's a question of balance. We need to use resources at home but we also need to utilize the world market. Plastics

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<sup>177</sup> See Mr Barry Dennis' comments on page 75.

<sup>178</sup> For a study of public attitudes to recycling, including participation, see, for example, Thomas (2001).

<sup>179</sup> In 2012, a fire broke out at the Wood Recycling Services Limited centre in Potters Crouch, St Albans, which was not declared to be extinguished for three months; see the Environment Agency's report on the incident: <https://www.gov.uk/government/publications/appspound-lane-waste-site-potters-crouch-hertfordshire/appspound-lane-waste-site-potters-crouch-hertfordshire> (accessed 27 April 2015).



is a good example. At the moment a lot of plastic goes to China.<sup>180</sup> Jeff and I have been part of an International Solid Waste Association (ISWA) initiative.<sup>181</sup> The market in China is probably relatively stable but the quantity of plastic it is currently importing is about half the quantity of plastic that is recycled internally there, and recycling plastic in China will increase by a factor of some multiples over the next few years. The quality of the imported plastic from Europe and North America is much higher than the internal plastic and, while that is the case the market is likely to be relatively stable. If that changes, which it might do over a 10- to 20-year period, then China will no longer wish to import plastic and we will be stuck unless we do something about our internal markets. There's also been a lot of discussion about export of so-called RDF to Europe. I asked the author of the Chartered Institution of Wastes Management (CIWM) report at the RWM (Recycling and Waste Management) conference in Birmingham last year: 'Are we exporting RDF, or are we exporting minimally processed residual waste?'<sup>182</sup> She said, 'It is residual waste', and to me that is plain wrong but we can discuss that further.

The other thing about export is that we haven't discussed export of hazardous waste. It is a big issue in all of the Basel Convention meetings and a lot of WEEE (Waste Electrical and Electronic Equipment) which is exported from this country is material that is not fit for reuse and we do need to get that right.<sup>183</sup> Exporting usable computers to schools in Uganda is a good idea; exporting computers where 70 per cent of the container load is WEEE that cannot be reused is wrong.

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<sup>180</sup> See note 176.

<sup>181</sup> The Globalisation of Waste Management taskforce for the ISWA's European Group.

<sup>182</sup> The RWM exhibition in partnership with the CIWM first took place in Birmingham from 10 to 12 September 2013: 'The event is the result of the merger in December 2010 of the i2i Events Group's (formerly Emap) RWM exhibition and CIWM and ESA's Futuresource show...', quoted from CIWM's website, [http://www.ciwm.co.uk/CIWM/MediaCentre/PressReleases\\_archive/Press\\_Releases\\_2013/ciwm\\_news\\_300813.aspx](http://www.ciwm.co.uk/CIWM/MediaCentre/PressReleases_archive/Press_Releases_2013/ciwm_news_300813.aspx) (accessed 12 September 2014).

<sup>183</sup> The Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal was adopted in 1989 and came into force in 1992 under the remit of the United Nations Environment Programme and with the participation of 170 member countries. In particular, the Convention was designed to address the inequities of hazardous waste disposal practices and resultant environmental pollution in countries with poor environmental law and regulatory infrastructure, from 'toxic ships', for example. For the Convention's history, see <http://www.basel.int/TheConvention/Overview/History/Overview/tabid/3405/Default.aspx> (accessed 27 April 2015).

If I could just raise one further topic that we haven't talked about and that is waste prevention. Waste prevention has been at the top of the waste hierarchy since it was first introduced in the 1970s.<sup>184</sup> We have done sweet nothing about it for 30 years. It was only with the revised Waste Framework Directive requiring member states to have produced Waste Prevention Programmes by December 2013<sup>185</sup> – and I suspect the UK nations may be among the only ones that actually met the deadlines because that's what we do here – that it's actually coming onto the agenda, or at least it's coming onto the agenda in Scotland and Wales where their programmes actually appear to mean something. To pick up a point that was made earlier about C&D (construction and demolition) waste, Ernie I think made the point about over-ordered bricks and so on.<sup>186</sup> Wastage rates in that area have been around 10 per cent. The recycling targets have actually been a problem here, they have had a perverse effect because unused bricks that could have been used, completely new bricks, were simply going and being crushed and recycled as aggregate and everybody produced a big smile because of this recycling. We are now trying to change that to waste prevention so that the bricks are reused for their original purpose, which clearly saves a lot more carbon.<sup>187</sup>

**Coggins:** I will try and link various strands of what you've touched on earlier, the circular economy.<sup>188</sup> Really, it's the issue of waste and when does waste cease to be waste? WRAP has been mentioned; it has developed a lot of Quality Protocols.<sup>189</sup> Europe is going the other way and talking about 'end-of-waste' criteria. I think that's something that we need to consider. Where do we go? The

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<sup>184</sup> In the European Union's second Environment Action Programme, introduced in 1977, '... measures for setting up the machinery for preventive action, particularly as regards pollution, land use and the generation of waste ...' was one of its five guiding principles; <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012AE1052> (accessed 27 April 2015).

<sup>185</sup> See note 175. Department for Environment, Food and Rural Affairs (2013b).

<sup>186</sup> See page 58.

<sup>187</sup> In the UK, WRAP, for example, has led initiatives to promote the reuse of materials in the construction industry since 2000. See <http://www.wrap.org.uk/category/sector/construction> (accessed 28 April 2015).

<sup>188</sup> See note 78.

<sup>189</sup> 'The Waste Protocols Project is a joint Environment Agency and WRAP initiative in collaboration with industry, funded by the Department for the Environment, Food and Rural Affairs (Defra), the Welsh Assembly Government (WAG), and the Northern Ireland Environment Agency (NIEA) as a business resource efficiency activity.'; quoted from WRAP's website, content archived 21 May 2014; <http://www.wrap.org.uk/content/quality-protocols> (accessed 28 April 2015).

UK published a resource security plan a little while ago and it recognizes the danger of reliance on imports – I think with regard to WEEE it brings in all the precious metals, the palladium group, and so on.<sup>190</sup> With the RDF side of things, what one has to remember is that in 2008 there were no RDF exports – last year the figure was 1.8 million tonnes.<sup>191</sup> And the issue is if they meet, supposedly, trans-boundary movement regulations that a difference between RDF, which is rather crudely processed and has a low calorific value and solid recovered fuel (SRF) which is higher quality.<sup>192</sup> SRF is tending to go to cement kilns requiring a higher specification, RDF is going to incinerators, which have surplus capacity. Last week a consortium of incinerators, municipal authorities in Europe, brought out a statement saying that, whatever happens, RDF movement must all be covered by waste legislation and that's a very different approach to the Quality Protocols where the argument and the end of waste is that if you can clarify when waste becomes a product it doesn't fall anymore under the waste legislation.<sup>193</sup> And I think that comes back to the circular economy and one of the things that I've been a little bit concerned about is that when you read about the circular economy it all tends to be dominated by materials, energy tends not to be mentioned, yet the carbon value of our residual waste needs to be considered as an important energy resource, whether that's in incineration, whether it's gasification, the new technologies are maturing very, very quickly in this country. Energy-from-waste is a changing technology and I think we have to recognize that residual waste and segregated waste can contribute to our energy issue.

**Eminton:** Just coming back on recycling; there's nobody here from WRAP so I don't want to defend them too much because we do have our criticisms of them, but they have invested in trying to get the UK's recycling and reprocessing going. They did invest in the newsprint sector and they've also recognized the fact that there could be a problem with plastics if China was to slow down, and they are putting money into a plastics sector. From a manufacturing point of

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<sup>190</sup> Department for Business, Innovation and Skills; Department for Environment, Food and Rural Affairs. (2012).

<sup>191</sup> See Department for Environment, Food and Rural Affairs (2014), page iii.

<sup>192</sup> Dr Chris Coggins commented: 'RDF undergoes limited processing and is usually incinerated, whilst SRF is prepared to meet customer specifications concerning a higher calorific value, usually cement works.' Note on draft transcript, 15 May 2015.

<sup>193</sup> See European Cement Association, Confederation of European Waste-to-Energy Plants, European Suppliers of Waste-to-Energy Technology *et al.* (2014).

view, we have got three newsprint mills in the UK all using recycled materials. We've also got one of the largest investments we've seen in recent years in the Palm newsprint mills, almost as big as the Channel Tunnel construction project.<sup>194</sup> We've seen SAICA build a new cardboard mill in Manchester and we've got a third new project on the cardboard side coming up in Kent, so there is quite a lot of investment in the recycling industry or the reprocessing industry in the UK.<sup>195</sup> Where we fail, we see material being exported, some plastics going abroad, cardboard going abroad because we haven't got the capacity here, or the demand for the product. There's no point making cardboard if you don't need it. So material has to go to China and we've lost our steel industry. There are still steelworks here so the biggest exporting material is steel. I think it's a hard call to say that we should build a new steelworks, it just isn't going to happen in terms of investment. So, for the time being, those export markets are clearly important although, I totally agree, we need to sort our plastics and try and get more plastics reprocessed domestically.

**Byrne:** Just a last point regarding the export of solid recovered fuel. There's an article in the November 2013 edition of the CIWM journal, I believe, on the AEB energy-from-waste plant in Amsterdam.<sup>196</sup> They were going to subsidize local authorities who signed up to export waste into their facility and, under the Renewables Obligation, pay them the dividend from any energy and CHP (combined heat and power) provided by their plant as subsidies for their local community.<sup>197</sup> So effectively, even if there's a waste disposal authority in place or municipal authority, they can opt out and divert their SRF waste there, to Amsterdam, for example, and not be included within the regional waste management plan. It does lead to some concern in the future about sustainable

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<sup>194</sup> The Palm Paper Mill is located in Kings Lynn, Norfolk; see <http://www.palmrecycling.co.uk/materials-recycling/palm-paper-mill/> (accessed 12 March 2015).

<sup>195</sup> The SAICA Paper Mill, PM11 Project for recycling corrugated boxes, is based in Partington, Manchester; see <http://www.saica.com/en/Paper/Pages/PM11Project.aspx> (accessed 12 March 2015). For cardboard recycling facilities in Kent, see details of D S Smith's paper mill in Kemsley; <http://www.dssmith.com/paper/about/paper-mills/kemsley-uk/> and Smurfit Kappa's recycling facility in Townsend Hook (websites visited 22 June 2015).

<sup>196</sup> Pranger (2013).

<sup>197</sup> Introduced in 2002, the 'Renewables Obligation requires licensed UK electricity suppliers to source a specified proportion of the electricity they provide to customers from eligible renewable sources'; quoted from the Department of Energy and Climate Change policy on 'Low Carbon Technologies', 12 October 2012, updated 30 March 2015; see Department of Energy & Climate Change (2015).

waste management nationally: this system would subsidize other EU member states for their energy surpluses and support their infrastructure, instead of investing in and supporting our own infrastructure for sustainability, as well as our economy and our own GDP.

**Wright:** Just a point of clarification. I certainly wasn't suggesting that we are awash with households in this country with 14 or 15 containers, just pointing out that there are some who do.<sup>198</sup> However, Hamburg is one of the five city states in Germany, it's huge. They've got everything in Hamburg, multistorey flats, low rise, everything, and they collect recyclables from everywhere, as far as I could see when we went and looked at it. But yes, they collect their recyclables co-mingled and so does Munich, another city state. We're certainly not the only ones who do it. The other issue we haven't covered is waste audits. We certainly audit our contractor on what goes through our MRF and waste transfer station. We carry out waste audits where the destinations of the materials are unclear, or not as accurate as we would hope. The plastic recyclables go to Milton Keynes MRF, so they're not going three times around the world.<sup>199</sup> Last but not least, there was an item on your agenda about the 'Winter of Discontent' and I was a senior shop steward then so perhaps we won't have time to mention that or talk about it today but that's a very interesting subject.<sup>200</sup> We were unique in Luton, we had a contractor who was awarded the contract that never lifted a bin, swept a broom in anger, they just would not meet the criteria, they wouldn't provide the performance bond that the council wanted and they never started the contract. That's all written up in my history of waste in Luton.<sup>201</sup>

**Ruddock:** We were expecting the 'Winter of Discontent' would be mentioned, but we are aware of that extremely interesting period.

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<sup>198</sup> See page 18.

<sup>199</sup> Mr Mick Wright noted, '... all Luton's recyclables go to recovery sites in the UK, with the one exception being PET bottles, which are exported to Holland or Germany, depending on where FCC Environment can get the best price.' Note on draft transcript, 8 May 2015.

<sup>200</sup> During what became popularly known as the 'Winter of Discontent' in 1978 to 1979, widespread public sector strikes in the UK led to the breakdown of key municipal services, including waste collection; see Black and Pemberton (2009).

<sup>201</sup> See page 18. See also an interview with Mr Mick Wright conducted for the History of Modern Biomedicine Research Group, available to download at [www.histmodbiomed.org](http://www.histmodbiomed.org).

**Gladding:** I want to reflect a little bit on something we've really only touched briefly on today, but I think it's very important, and that is occupational health and safety in the waste industry. The waste industry kills between seven to fourteen people a year on average.<sup>202</sup> That's quite a lot of people. It's got the worst accident rate of all industries. We've really barely touched on it today. I think the important thing to remember is we started off talking about collecting bins, and then one of the drivers for bringing in wheeled bins was health and safety because operatives were saying that people were being cut from the bags and the glass, and all the rest of it. So we went to wheeled bins. These bins increased the waste volume, which brought other issues but, really, up until that point we'd been very much about containerizing the waste and keeping it away from the people that are collecting it.<sup>203</sup> Recycling reversed all of that.

Suddenly we were putting people on conveyor belts, hand-sorting what everybody else throws away.<sup>204</sup> And it was pretty well known in Europe that that made people quite sick, especially if they were hand-sorting just plain waste, which some of them were.<sup>205</sup> In this country, we made a conscious effort not to have mixed waste recycling facilities and we stuck to MRFs for several years; however, now we do have MBTs (mechanical biological treatment), which frankly are, to me, another mixed-waste recycling facility.<sup>206</sup> The working environment in these places is not great. I've measured them. We do have a driver as well for more competence in the waste industry, and there's a lack of training. Obviously, we have an awful lot of people who don't speak English who are utilized.

Occupational issues are still very important and the waste industry is trying to address those. We do have the Waste Industry Safety and Health Forum, as Paul already mentioned earlier, but there's a long way to go.<sup>207</sup> There are still lots and lots of issues and it ain't rocket science in terms of figuring out what is killing

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<sup>202</sup> In 2013 to 2014, the Health and Safety Executive recorded five fatalities, four of workers in the 'waste and recycling' industry and one member of the public as a result of the industry's operations; see Health and Safety Executive (2014b), page 8.

<sup>203</sup> See page 27.

<sup>204</sup> See Figure 20.

<sup>205</sup> See Gladding (2002).

<sup>206</sup> See, for example, Department for Environment, Food and Rural Affairs (2012b).

<sup>207</sup> See notes 131 and 132.

these people: they are climbing into compactors, they're getting hit by traffic, you know. It's nothing that isn't seen in any other industry, it's just a culture change that is still needed in the waste industry.

**Ruddock:** What an appropriate point to end on. At the meetings that I am used to chairing, the Chair normally sums up and comes up with the points that have been raised that require action. Of course, this is for me unique, this is a history and so we're not talking about what requires action, we're talking about what has been happening and it's a continuing story, and we're going into the future not knowing what it's going to be like until you do the next history. For me it's been fascinating, I hope it has been for you as well. It's a great pleasure for me to come here and really revive a lot of my interests in the waste industry. I just want to call on Tilli to say some final words.

**Tansey:** Well, I would like to thank you all very much for coming, participating and speaking so freely this afternoon. As I said at the beginning of this meeting, this is quite a big departure for us from our usual biomedical meetings, and it has been an absolutely enthralling afternoon.

Always, a key point for all of these meetings, in addition to all of your contributions, is the Chair who actually tries to mentor these meetings, and in Joan we've had somebody who's very enthusiastic and knowledgeable and she's had an extremely light touch, which has been really great. She's done the crucial thing of getting us to the drinks on time. I always measure the Chairman on that, so I will be inviting you back Joan, you've passed your audition.





## Biographical notes\*

### **Mr Timothy Byrne**

CWasteManager (b. 1979) worked as a refuse collection operative for Dudley Metropolitan Borough Council from 2002 to 2009. As an operative and driver, he has also worked with Weir Waste Services (2009–2011) and Wychavon District Council (2013). He is currently studying for a BSc in Wastes Management and Pollution Control at the University of Northampton. He is a member of the Chartered Institution of Wastes Management and of the Spanish solid waste association (Ategrus), and is certified as a waste manager by the International Solid Waste Association.

### **Dr Chris Coggins**

PGCE PhD FCIWM FRGS FRSA (b. 1947) was a lecturer and senior lecturer in Geography, then Reader in Waste Management at Luton College of Higher Education/ University of Luton (1972–1997). At Luton, he was also the Director of the Centre for Waste Management (1993–1997). From 1997 to 2001, he was Director of

the University of Sheffield's Waste Management and Technology Centre. In 2001, he became Director of WAMTECH, an independent resource management consultancy. He has published widely in waste management journals internationally.

### **Mr Jeff Cooper**

MSc (b. 1949) studied geography at the London School of Economics, then worked as a researcher and lecturer at Kingston Polytechnic from 1972 until 1982. He left academia to work at the Greater London Council in 1982 as Waste Recycling Coordinator. Subsequently, he was appointed Waste Planner for the London Waste Regulation Authority (LWRA), and became the Authority's representative for the recycling working group of the International Solid Waste Association (ISWA), then Vice-chair. Following the abolition of the LWRA in 1996, when it was subsumed into the new Environment Agency, he joined the Agency on a project based

\* Contributors are asked to supply details; other entries are compiled from conventional biographical sources. Information was also derived from interviews with individual contributors conducted for the History of Modern Biomedicine Research Group, available to download at [www.histmodbiomed.org](http://www.histmodbiomed.org).

at its head office to develop the regulatory framework for packaging waste. In 2004 he was elected Junior Vice President of the Chartered Institution of Wastes Management, and served as President from 2007 to 2008. After his retirement from the Environment Agency in 2009, he became a consultant in environmental management and an independent journalist as Overseas Correspondent for the online newsletter, *letsrecycle.com*, Editor of the *Waste and Resource Management Journal* for the Institution of Civil Engineers, and Contributing Editor to *Croner's Environment Magazine*. He is also a member of the Globalisation of Waste Management taskforce of the ISWA's European group.

#### **Mr Barry Dennis**

(b. 1946) joined the Deards group of companies when he left school in 1964. He progressed to the main board and was responsible for the subsidiary of the group involved in waste management. He has been involved in all aspects of the industry, from operating landfills and incinerators to managing a large vehicle fleet for waste collection services in both the public and private sectors. He was the Director General of the Environmental Services Association (retired 2014). He is also a Trustee, Director, and past President of the Chartered

Institution of Wastes Management and is the Past Master of the Worshipful Company of Water Conservators, having been Master during 2011/2012. He is a director and trustee of Wamitab (Waste Management Industry Training and Advisory Board) and is also its treasurer. He also holds other directorships of companies involved in the waste and recycling sector.

#### **Mr Steve Eminton**

is a journalist and publisher who specializes in environment topics and has covered water, housing, and recycling for a variety of publications. Having started his career with *Construction News*, he has since worked on other publications including *Water Bulletin* and *Municipal Journal*. He started specializing in recycling and sustainable waste management in 1994. Since October 2000, he has been the Editor of *letsrecycle.com*, and has developed a number of other environmental publications covering topics such as air quality and organics recycling.

#### **Mr John Ferguson**

OBE BSc(Eng.) BA MA CEng  
FICE MIMechE FCIWM  
FCIWM (b. 1927) Following work on engineering projects in the UK and overseas, he joined the Greater London Council's Department of Public Health Engineering in 1966. Within the department, he served

on the project management team for the Edmonton waste-to-energy plant and was Project Manager for capital developments such as the containerized river, rail, and road transfer stations in London. He was also Head of the Design and Development Division in the 1970s and Deputy Director of the department and, from 1982, General Manager of its Waste Management branch. In 1986 he became Director of the London Waste Regulation Authority (LWRA). When the LWRA was incorporated into the Environment Agency in 1996 he was appointed Chair of the Thames Regional Environment Protection Advisory Committee (until 1999). He was President of the Institute of Wastes Management (1990–1991), now the Chartered Institution of Wastes Management. He also served as President of the International Solid Waste Association (1998–2000). In 1994 he was awarded an OBE for his service to the waste management industry.

#### **Dr Toni Gladding**

MBA PhD has researched the issues surrounding health and waste management since the 1990s. Her doctoral research at the University of Luton investigated, for the first time in the UK, the health of workers hand-sorting recyclables. She was a Research Fellow at the

University of Bedfordshire from 1997 to 2001, and she studied for an MBA at the Open University from 1999 to 2002. At the Open University, she was Lecturer in Environmental Engineering (2003–2013), then Senior Lecturer for the Open University Integrated Waste Systems (2013–). Her current research focuses on particulates and bio-aerosols in an environmental and occupational context at a variety of waste management sites, including composting (open windrow and in vessel), materials recovery facilities, and mechanical and biological treatment plants.

#### **Professor Jan Gronow**

PhD BA FMinSoc MCIWEM (b. 1945) has been Visiting Professor in Waste Policy at the Centre for Environmental Policy at Imperial College, London, since 2005. As a geochemist she joined the Department of the Environment's Waste Technical Division in 1988 and then the Environment Agency on its formation in 1996. She managed the Government's waste research programme over a period of 15 years and provided technical advice on waste and resource management to policy colleagues in Defra, and its predecessors, and in the Environment Agency over that time. She was a member of the UK team that negotiated

waste-related legislation in Europe for 15 years. She chaired the EU Technical Advisory Committee that developed the Landfill Directive waste acceptance criteria between 2001 and 2002. Since 2005, she has been an independent consultant, and was a strategic adviser to Defra's Waste Evidence Team from 2006 to 2012. She was co-author of Defra's Waste and Resources Evidence Strategy (2007–2011), drafted to assist with the implementation of the Waste Strategy for England 2007 (Defra (2007)). She has been a member of the Engineering and Physical Sciences Research Council's peer-review college since 2006.

**Councillor Lewis Herbert**

(b. 1955) studied economic history and politics at York University (1973–1976), and has written two histories of UK waste management over the last century, with research informed by over 30 years of experience in the industry (Herbert (1998), Herbert (2007)). He was a member of the Greater London Council from 1980 to 1986, where he chaired the Environmental Panel and led new London-wide initiatives on recycling, improved waste management and pollution control. Over the following two decades he worked on environmental protection, recycling and waste reduction initiatives,

first in New Zealand and then for Cambridgeshire and Essex County Councils. For the last decade he has led short courses for planners across East England, delivered by Anglia Ruskin University. He is also a local Councillor in Cambridge for the Labour Party, where he is Leader of the City Council.

**Mr Nick Patterson**

(b. 1946) worked for over 40 years in the waste industry, starting on the rounds as a refuse collector in Westminster City Council in 1968. He progressed through the Council's management training scheme and was appointed Operations Manager for the refuse collection service until the privatization of the service in 1989. He then worked with Veolia as contract manager at the City of London (4 years), Heathrow (11 years) and finally at the London Borough of Brent (4 years). In 1981 he presented a paper entitled 'Hospital Waste' to the CIWM (then IWM), which resulted in the GLC taking up his recommendations for the management of clinical waste.

**Professor Judith Petts**

CBE PhD AcSS FRGS (b. 1954) graduated in geography from Exeter University in 1975. After a few years in business, she became a research fellow in the Institute

for Planning Studies, University of Nottingham and then in the Department of Chemical Engineering at Loughborough University on a project on major hazard control. In 1987 she moved to the Centre for Extension Studies at Loughborough, taking over a series of post-experience short courses, and developing the first postgraduate part-time course in hazardous waste management. In 1996 she became Director of the renamed Centre for Hazard and Risk Management and was awarded her PhD by publication. In 1999 she moved to the University of Birmingham to become Professor in Environmental Risk Management, then Head of the School of Geography, Earth and Environmental Sciences and, in 2007, Pro-Vice-Chancellor (Research and Knowledge Transfer). In 2010 she moved to the University of Southampton as Dean of the Faculty for Social and Human Sciences and is now Pro-Vice-Chancellor (Research and Enterprise). She has held multiple advisory appointments, including to a House of Commons enquiry on waste management. She was also a member of the NERC Council (2000–2006), and of the Royal Commission on Environmental Pollution (2005–2011). Currently, she is a member of Defra's Science

Advisory Council; Co-chair of the BIS Sciencewise Steering Group; member of BBSRC Council; and Chair of the Defra/DECC (Department for Energy and Climate Change) Social Science Expert Panel. For 10 years she was a member of Veolia's advisory board. She was appointed CBE in 2012 for her services to scientific research.

### **Dame Joan Ruddock**

DBE BSc ARCS (b. 1943) was a Member of Parliament for Lewisham Deptford from 1987 to 2015. In 1989 she brought forward a Private Members' Bill on fly-tipping that became the Control of Pollution Act and, in 2003, a Private Members' Bill that became the Household Waste Recycling Act. In 2007 she became Parliamentary Under Secretary in the Department for Environment, Food and Rural Affairs and requested the waste brief, serving as Minister for Biodiversity, Climate Change and Waste until she joined the newly created Department for Energy and Climate Change in October 2008. For Dame Joan's final speech to the House of Commons, 26 March 2015, see <http://www.joanruddock.org/> (accessed 22 June 2015).

### Mr Ernie Sharp

BSc MPhil (1921–2015) worked as a dustman in Lewisham Borough Council from 1947. In the late 1950s he became Foreman of his depot, then Senior Foreman. During this period he also joined the National Union of Public Employees, in which he was a shop steward. In 1959 he passed his Testamur examination at the Institute of Public Cleansing, and became an associate member of the Institute. In 1965 he became Junior Area Manager of the Rivers and Refuse Disposal division in the GLC's Public Health Engineering Department, for the boroughs of Croydon, Greenwich, Lewisham, and Southwark. He was promoted to Deputy Area Manager, then Area Manager. In the early 1970s he was Assistant General Manager of the GLC's Solid Waste Management Branch. Ernie Sharp also taught at Hackney Community College for over 30 years on the Higher National Certificate and NEBS courses in wastes management. He took early retirement from the GLC circa 1983 then studied for a BSc in waste management at the University of Northampton (awarded 2002), followed by an MPhil, which he received when he

was 88.<sup>208</sup> For a brief obituary from Northampton, see <https://www.northampton.ac.uk/news/ernie-sharp-university-of-northampton-s-oldest-graduate-passes-away> (accessed 18 May 2015).

### Professor Tilli Tansey

OBE PhD PhD DSc HonMD HonFRCP FMedSci (b. 1953) graduated in zoology from the University of Sheffield in 1974, and obtained her PhD in *Octopus* neurochemistry in 1978. She worked as a neuroscientist in the Stazione Zoologica Naples, the Marine Laboratory in Plymouth, the MRC Brain Metabolism Unit, Edinburgh, and was a Multiple Sclerosis Society Research Fellow at St Thomas' Hospital, London (1983–1986). After a short sabbatical break at the Wellcome Institute for the History of Medicine (WIHM), she took a second PhD in medical history on the career of Sir Henry Dale, and became a member of the academic staff of the WIHM, later the Wellcome Trust Centre for the History of Medicine at UCL. She became Professor of the History of Modern Medical Sciences at UCL in 2007 and moved to Queen Mary University of London (QMUL), with the same title, in 2010. With

<sup>208</sup> A digital copy of Mr Ernie Sharp's Master's dissertation, *The London Waste Project: The evolution of solid waste management in Greater London*, will be deposited with the archives of this meeting at the Wellcome Library, London, Archives and Manuscripts, GC/253.

the late Sir Christopher Booth she created the History of Twentieth Century Medicine Group in the early 1990s, now the History of Modern Biomedicine Research Group at QMUL.

**Mr Paul Thornber**

(b. 1945) began his career in mechanical maintenance in the food and soft drinks industry. He then had various positions within the UK waste management industry where he rose from the position of collection driver to incineration plant supervisor. With the introduction of BS5780, now BS EN ISO 9001, he specialized in the field of quality management systems and, since 1995, of Health and Safety management. His service within the industry has been spent exclusively with Veolia, in which he now holds the position of QHSE Projects Manager. He is a Chartered Health and Safety Practitioner, and holds Corporate Membership of the Chartered Institution of Wastes Management and the International Institute of Risk and Safety Management. He was also Vice Chairman of the Environmental Services Association Health and Safety Working Group, and was also an active member of the Waste Industry Safety and Health Forum. He is a registered assessor and verifier for waste management, and health and safety

National Vocational Qualifications at all levels. He also sat on the Waste Management Industry Training and Advisory Board Standards Review Group, and was the Safety Adviser to this body for five years.

**Professor David Wilson**

MBE DPhil MA(Oxon) CSci MRSC CEnv CWasteManager FCIWM (b. 1952) graduated in chemistry from the University of Oxford in 1974 and obtained his DPhil in planning for municipal solid waste management in 1977, sponsored by the Harwell Laboratory. He ran Harwell's Hazardous Waste Research Unit for the Department of the Environment until 1982, when he spent 18 months in Hong Kong, applying his doctoral research to develop a decision support tool for planning its modern waste management facilities. He moved to Environmental Resources Limited (ERL – later ERM) in 1985, and led its international waste management practice for 20 years, helping cities and countries to identify and implement the next appropriate steps in developing their own systems for managing both municipal solid wastes and industrial hazardous wastes – hence his interest in waste history. Over nearly 40 years, his work has been split roughly 50:50 between 'North'

and ‘South’. He advised Defra for nearly 10 years, until 2013, on the evidence required to underpin policy making, recently focusing on waste prevention. He was Editor-in-Chief for UNEP’s inaugural *Global Waste Management Outlook*, (United Nations Environment Programme (2015)). He continues to combine consultancy with teaching and research at Imperial College London.

**Mr Mick Wright**

CEnv DMS MBA MCIWM (b. 1949) commenced work as a refuse collector for Luton Borough Council in February 1974 and became an LGV driver in 1975. He was elected as a Transport and General Workers Union Senior Shop Steward in 1977. In 1981 he was elected as a councillor for Bedfordshire County Council, serving until 1989. He served a second term at the council as Deputy Leader of the Labour Group and Chair of the Environmental Services Committee. In 1990 he was

appointed as Quality Assurance Inspector for Luton Borough Council’s cleansing contract, and in the early 1990s he was appointed as Refuse Collection Manager, then Street Cleansing Manager, and subsequently Cleansing General Manager. In 1996 he was appointed Head of Waste Management at Luton Borough Council and in the same year he became a member of the National Association of Waste Disposal Officers. He sat on various working parties of the CIWM and joint working groups with Defra. He assisted to set up the Lead Officers on Waste Management Group (LOWM), which included representatives from Cambridgeshire, Essex, Hertfordshire, Luton, Norfolk, Peterborough, Southend-on-Sea, Suffolk, and Thurrock. He retired in 2009, and is currently writing a book with the working title, ‘The History of Rubbish in Luton from 1850 to 2010’.



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\* Please note that references with four or more authors are cited using the first three names followed by 'et al.'. References with 'et al.' are organized in chronological order, not by second author, so as to be easily identifiable from the footnotes.

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